

# amateur radio

AUGUST, 1974

## CONTENTS

### TECHNICAL —

Adding FM to the FT200	13
An SL600 Series SSB	
Transceiver	8
Commercial Kinks	15
Newcomers Notebook	16
Palec VCT Modifications	12
Try This	17

### GENERAL —

DX Adventure on Willis Island	11
Gleanings from a Trip to ZL	14
Marconi and Others	17
Silent Keys — In Contemplation	17
Stolen Property	26
What's Around the Corner in AR	22

### DEPARTMENTS —

AARTG	19
Awards Column	21
Book Review	26
Contests	20
Hamads	26
Intruder Watch	16
Key Section	19
Letters to the Editor	22
Project Australis	21
QSP Air Wave Anarchy	3
QSP	7
VHF-UHF — an expanding world	18
VK-ZL-Oceania DX Contest	
Rules	20
You and DX	22
20 Years Ago	21
YRCS	26

### COVER PHOTO

At the recent Youth Expo at the Moorabbin Town Hall, a member of the Moorabbin and District Radio Club shows a youthful visitor how to use a morse key.



# GRID DIP METER SPECIFICATION



## Model TE-15

Freq. Range: 440kHz-280MHz  
in 6 Coils  
A Coil 0.44—1.3MHz  
B Coil 1.3—4.3MHz  
C Coil 4.14MHz  
D Coil 14.4MHz  
F Coil 120-280MHz  
Transistor: 3 TR's & 1 Diode  
Meter: 500µA F.s.  
Battery: 9V (BL-006P)  
Dimensions: 180x80x40mm  
Weight: 730g

Price \$36.50  
P & P \$1.00

## Model HE-22D

Model TE-22D

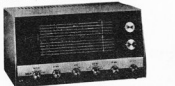
Freq. Range: Sin: 20Hz-200kHz  
Square: 20Hz-25kHz  
Output Voltage: Sine: 7 volt  
Square 7 volt  
Output Impedance: 1000 ohm  
Freq. Accuracy:  $\pm 3\%$   $\pm 2$ Hz  
Distortion: Less than 2%  
Tube Complement: 6BM8  
12 AT7, 6Z4  
Power Source: 105-125, 220-  
240V AC, 50/60 cps. 19W  
Watt Attenuation Range  
4 Ranges—1/1, 1/10, 1/100,  
1/1K

Price \$49.50  
P & P \$2.00

## LAFAYETTE HA-600A SOLID STATE

### GENERAL COVERAGE

- 5 BANDS 150-400 KHz, 550-1600 KHz (Broadcast band), 1.6-4.8 MHz, 4.8-14.6 MHz, 10.5-30 MHz. Operates from 12 Volts DC (negative ground) or 220-240 Volts 50 Hz.
- Field Effect Transistors in RF Mixer and Oscillator Stages.
- Two Mechanical Filters for exceptional selectivity.
- Voltage Regulated with Zener Diodes.
- Product Detector for SSB/CW.
- Edge Illuminated Slide Rule Dial with "S" Meter.
- Continuous Electrical Bandspread Calibrated 80-100M Amateur Bands.
- Variable BFO, Automatic Noise Limiter.
- Speaker Impedance: 4 to 16 ohms.



Price \$215.00  
P & P \$2.00

Also available — HA800B Amateur Band, 6 Bands 3.5MHz to 29.7MHz and 50-54MHz as above features with 100kHz calibration facility: \$210.00, 100kHz Xtal Extra \$10.75. P & P \$2.00

## SOLID STATE WIDEBAND RF SIGNAL GENERATOR



MODEL SG-402  
This is an all solid state, wideband RF Signal Generator which produces low impedance low distortion RF signals. It is highly dependable and easy to operate, and is a handy working instrument for service benches and electronic equipment production centres.

### SPECIAL FEATURES

- Generates wide range signals from 100kHz to 30MHz in six frequency ranges.
- All solid state construction for instant waveforms, compact and lightweight portability.
- Includes 400Hz signal source for modulation of output signal, which can be modulated by external sources.

Price \$99.50. p & p \$2.00

## P.M.G. TYPE TELEPHONES—DIAL TYPE EXTENSION



Ericson Type manufactured by L. M. Ericson. As used by PMG Dept. As new condition. Dial in base, \$17.50 Tested, p&p 75c Black Phone. Chrome Dial Standard type. Robust construction. \$27.95. Few only p&p 75c Plastic Type, Standard PMG type. Manufactured by L. M. Ericson. As new tested. All phones fitted with standard phone plug and socket. \$17.50. p & p 75c Double Phone Plug, 6.5mm 75c Standard 2 Circuit Phone Plug PMG Type 30c

PMG Type Counters, 4 digit, 48 Volt operation 50c  
PMG Type Telephone Plug & Socket, round type  
PMG Type Phone Plug & Socket, standard Ericson  
Type White Plastic 95c per pair  
PMG Type Telephone Extension Bells, 48V 2.00  
230 Volt RVB Horn Tested 17.50

## TRIO 3" OSCILLOSCOPE DC — 1.5 MHz MODEL CO-1303A



### SPECIAL FEATURES

- Vertical sensitivity of 20 mV/cm, three step attenuation, AC DC operation & wideband frequency response from DC to 1.5MHz.
- DC vertical and horizontal amplifiers for wide versatility make possible external sweep speeds of less than 1Hz.
- All solid state construction for compact, lightweight portability.
- Smoked filter glass CRT face and exclusive designed graticule, graduated in dB for clear waveform comparisons.
- Direct input to 150MHz for SSB and AM transmission monitoring.

Price \$150. p & p \$2.00

## AUGUST

### DISPOSAL SPECIALS

Coax. Cable, 58 ohm Ascend 15 P1/24. Brand new 1/4 outside diameter. 12c per yard. \$10 per 100 yard reel.

## T.C.A. COMMUNICATIONS RECEIVERS (R5223)

Frequency Coverage 1.5 MHz-30.5 MHz in 29 1 MHz bands. B.F.O., 100 kHz xtal cal., audio filter, in as new condition. Complete with new Phones \$295

## Brand new valves and semiconductors

2N3055	\$1.30
OA91	15c
807	\$2.00
1T4, 6C8, 1R5	75c
6BA6-6AK5-6V6G-6J6	\$1.00
2E26-QQE04/7-QQE04/10	
6SK7-ECH35-6K8G-5763	\$3.00
6SJ7GT-12AT7	\$1.50

## HAM RADIO (Disposal Branch)

104 Hightett Street, Richmond,  
Vic., 3121

Compact-Space Saving.  
Printed Circuit for uniform Characteristics.  
Low Distortion  
Dimensions: 140 x 215 x 170mm  
Weight: 2.8kg.

## DX150B REALISTIC WITH SEPARATE SPEAKER



The popular REALISTIC DX150B which has gone from strength to strength with amateurs, short-wave and broadcast listeners alike, now has a further improvement, A SEPARATE MATCHING SPEAKER included.  
The DX150B gives long-range, world-wide realistic reception on 4 bands, including Broadcast Fully transistorised-all solid state-no warm-up delays, the DX150B will run on dry cells if current fails or is not available, will operate from a car's cigarette lighter or any 12V DC service. A 240V AC power supply is also built in. Over 30 semi-conductors-product detector for SSB/CW, plus fast and slow AVC-variable pitch BFO-illuminated electrical bandspread, fully calibrated for amateur bands-cascade RF stage-ANL for RF and AF-zener stabilised-OTL audio-illuminated "S" meter.

Price \$229.00  
P & P \$2.00

new price — \$189.00



# RADIO SUPPLIERS

323 ELIZABETH STREET, MELBOURNE, VIC., 3000

Phones: 67-7329, 67-4286 All Mail to be addressed to above address

Our Disposals Store at 104 HIGHTETT ST., RICHMOND (Phone 42-8136) is open Mondays, 10.30 a.m. to 5.0 p.m., and on Saturdays to midday.

# amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910



AUGUST, 1974  
VOL. 42, No. 8

Price, 50 cents

Registered at the  
G.P.O. Melbourne for  
transmission by Post  
as a Periodical—  
Category "B"

## QSP

### AIR WAVE ANARCHY

Listening on 14 MHz during early July you would probably have heard, around 14250, a very strong broadcast signal "jammed" by an even stronger station, swinging over 25 or 30 kHz.

Many "intruders" have appeared on the amateur bands in the last 25 years or so. It is many years since a "jammed" commercial, particularly of such signal strength, has appeared in exclusively amateur allocated frequencies. The origin of the commercial and its jammer is, at time of writing, undetermined but this is currently under investigation.

Intruders and pirates are nothing new to us but one wonders why many of the pirates do not hold or have not bothered to apply for a station licence.

Early in July, I received an overseas telephone call from an irate ZL who rang my office from New Zealand and abused me for not having sent him a QSL for the electorate of Phillip. Since I had not worked this ZL station and, in addition, live in the electorate of Flinders, he reluctantly accepted my explanation for not having QSL'd. Over the last 12 months I have received 18 QSL cards for contacts on 3.5 MHz CW from stations which I have never worked — being essentially a 14 MHz RTTY/Phone operator.

Surely a person who can receive 599 reports on CW, and on back-check, at speeds of 20 to 25 wpm, should be able to qualify for an amateur licence.

Not only are pirates of this type proliferating but so also are those operating in the "Citizens' Band". A recent printed sheet distributed in Melbourne indicates a growing political lobby by those CB operators who claim a "right" to operate in the public interest.

"Public Interest" be damned! The Institute is well aware of the activity of pirates both in the 11 metre band and elsewhere and has consistently pressed for firm action to be taken against the law-breakers by every possible means.

Furthermore, the Institute has made officially known its feelings and taken action to draw attention to two additional considerations; namely: the conservation of the frequency spectrum and the disrepute of the "Citizens' Band" radio in certain overseas countries where it is authorised.

Reports reaching the Institute appear to indicate that CB operations in the USA are now so extensive that little or no control can be exercised over them. Unlike the amateur and many other services which are largely self-policing, the CBers (and pirates) are known to exercise less control, if any, over their own activities.

It is to be hoped that the authorities are alert to the severe dangers inherent in legalising this kind of radio communication without the necessity to comment on the alternatives such as the use of the telephone and similar public services, keeping in mind the aspects of safety relating to the use of electrical apparatus and the fear of potentially great interference to other services and facilities.

JOHN McL. BENNETT VK3ZA

### STOP PRESS

Project Australia report that the call up date for Oscar 7 is now 3rd October, 1974.

<b>Editor:</b>	
Bill Roper	VK3ARZ
<b>Assistant Editor:</b>	
Bruce Bathols	VK3UV
<b>Technical Editors:</b>	
Bill Rice	VK3ABP
Ron Cook	VK3AFW
<b>Publications Committee:</b>	
John Adcock	VK3ACA
Rodney Champness	VK3UG
Syd Clark	VK3ASC
Ron Fisher	VK3OM
Ken Gillespie	VK3GK
Neil Osborne	VK3YEI
Howard Rider	VK3ZJY
Roly Roper	
Gil Sones	VK3AUI

### Contributing Editors:

Brian Austin	VK5CA
Deane Blackman	VK3TX
Peter Brown	VK4PJ
Eric Jamleson	VK5LP

### Drafting Assistant

Gordon Row	L30187
------------	--------

### Business Manager:

Peter B. Dodd	VK3CIF
---------------	--------

### Enquiries and material to:

The Editor,  
P.O. Box 2611W, Melbourne, 3001.

Copy is required by the third of each month. Acknowledgment may not be made unless specially requested. All important items should be sent by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying any reason.

### Advertising:

Advertising material should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 25th of the second month preceding publication. Phone: 24-8652.

Hamads should be sent direct to P.O. Box 150, Toorak, Vic., 3142, by the 3rd of the month preceding publication.

### Printers:

Chas E. Tully Pty. Ltd.  
35 Clifford Street, Huntingdale, 3166.  
Phone: 543 1242.

Published monthly as the official journal by the Wireless Institute of Australia.

Reg. Office:

P.O. Box 150, Toorak, Vic., 3142

# AMATEUR SECT

## AMATEUR SECTION ENLARGED

Call in soon and see some of these super new lines at the Gore Hill Centre.

### TRANSCEIVERS H.F.

**Kenwood TS-520** 160W, SSB transceiver covers 80 to 10 metres. Features noise blanker, VOX, DX switch, 8 pole crystal filter, CW filter etc. Has fully transistorised receiver power supplies. This is a really deluxe job in diecast case, not the usual pressed metal construction. Delivered due in September, but order now as demand will be heavy at **\$550.00** (Road freight extra).



**Yaesu Musem FT-101B** the famous 160-10 metre, AC/DC transceiver is now available direct from us. Indent price is just **\$525.00** (Road freight extra).

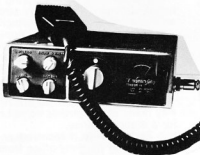


**Yaesu Musem FT200/FP100** combination also at only **\$370.00** (Road freight extra).



### TRANSCEIVERS 27 MHz

**Hi Gain SSB/AM**, 23 channels gives 5W on AM and 15W on SSB. All channel crystals included. Features ANL and noise blanker, PTT mike. Operates on 12V dc and has rf output and S meter. Indent price is only **\$200.00** (normal retail is \$275).



### VHF EQUIPMENT

**Icom IC22** 144-148 MHz, FM transceiver has power outputs of 1W and 10W. The 22 channels all have separate trimmers. Deviation 5-15 kHz. Features solid state Tx/Rx relay, large built-in speaker, MOSFET front end with 5 helical filters, noise cancelling mic., quick disconnect mobile mount. And if the spec doesn't grab you, the looks will. Soft green back lighting, special transmit light and even a light to tell you of incoming signals if the volume is turned down. Supplied complete with workshop manual and accessories right down to a silicone cloth to keep the set like new.



**Sideband NC310** 1W hand-held units. PMG approved. 3 channel capacity. Squelch. External aerial jack. Provision for external supply etc. Supplied with 27.24 MHz crystals (see below) **\$49.75** each.

**CB78 Pony** 5W AM, 23 channel complete with all channels and ideal for the novice licence when it starts. Mic. included for only **\$99.00**.



Fitted with one set of crystals for 146.00 or 146.5 MHz (please specify). Normal price is \$245, but we are introducing them at only **\$189.00**, freight anywhere for only \$3.50 including insurance). Crystals are also available at **\$9.00** a pair as follows:

		Tx	Rx
Old Channels	Channel 1	146.1	146.5
	Channel 4	146.1	145.9
	Channel 8	146.0	146.00
New Channels	42/45	145.1	145.7
	48/60	146.4	147.00
	50	146.5	146.5

**Ken KP202** 146-148 Hand-held transceiver, has 5 channel capacity with 2W output. Telescopic aerial, squelch, provision for external aerial and PL259 adaptor plug supplied. Operates on penlight cells. Crystals included for 3 channels. A very popular unit that we are introducing at **\$150.00** (P&P \$2). Crystals included as follows (please specify):

Alternative A	Tx	Rx
1 Channel 50	146.5	146.5
2 Channel 42/54	146.1	146.7
3 Channel 48/60	146.4	147.00

Alternative B	Tx	Rx
1 Channel 8	146.00	146.00
2 Channel 1	146.1	146.5
3 Channel 4	146.4	146.5

Special KCP-2 NiCad battery set and charger with 10 cells to suit the KP202 available at **\$35.00**.





# ION ENLARGED



**Power Supply** for above units, fully regulated 12V @ 3A from 240V mains **\$32.00.**

## COMMUNICATIONS RECEIVERS

We are now stocking the fantastic Barlow Wadley XCR-30 which covers 0.5 to 31 MHz. See the review in E.A. May 73. Use the famous Wadley loop principle found in many professional receivers. Ultra stable, highly sensitive for SSB and AM reception. Better than 0.1 uV sensitivity for 17 db sig/noise. Drift less than 70 Hz per hour. 3 kHz selectivity. Built-in telescopic aerial. External aerial, earth and headphone jacks plus provision for external supply. A beautiful **\$139.00** (freight free).



**CB74 Pony SW, AM, 6 channel capacity but crystals for one channel only supplied (see below). PMG approved and intended for fishing clubs etc. Complete with mic. and accessories at \$97.50.**

**Crystals** for Pony CB74 and Sideband NC310. Australian PMG approved channels 27.4 MHz (general purpose) **\$6.00** a pair. 27.85 MHz (fishing clubs) **\$7.50** a pair. Other channels are available all at **\$4.50** a pair. Channel 9 (27.065), Ch11 (27.085), Ch14 (27.125), Ch16 (27.155), Ch19 (27.185), also 28.100, 28.200, 28.300, 28.400, 28.500, NOTE each pair consists of Tx on stated frequency plus Rx 455 kHz below channel frequency.

**Trio 9R590S** 0.5 to 30 MHz receiver is still the ever popular budget priced job featuring product detector for SSB. 240V operated. Only requires speaker. New price is down to **\$152** (includes freight).

## AERIALS

We have placed large orders for the famous Hustler aerials from the US. See our ads last November/December and watch for further announcements. **Special 27 MHz** helical for mobile and base use. Only 48 inches long with 8 ft. of coax and PL259 connector **\$24.75.**

## SELL YOUR EQUIPMENT THROUGH US

Take advantage of our FREE Noticeboard to advertise to the many thousands of enthusiasts that pass through the Centre each week. We will also sell good used gear on consignment (callers only). Send your ads direct to Dick (we are NOT responsible for the outcome) or call in and ask for details.

## DICK SMITH ELECTRONICS CENTRE

Head Office and Mail Orders —  
**162 PACIFIC HIGHWAY, GORE HILL, 2065**  
**TELEPHONE: 439 5311**

Also at —  
**361 HUME HIGHWAY, BANKSTOWN, 2200**

## "WILLIS" AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding, use — "WILLIS" AIR-WOUND INDUCTANCES

No.	Turns	Dia.	per	Length	B. & W.	Price
		Inch	Inch	Inch	Equiv.	
1-08	1/2	8	3	No. 3002	75c	
1-16	1/2	16	3	No. 3002	75c	
2-08	5/8	8	3	No. 3006	88c	
2-16	5/8	16	3	No. 3007	88c	
3-08	3/4	8	3	No. 3010	\$1.06	
3-16	3/4	16	3	No. 3011	\$1.06	
4-08	1	8	3	No. 3014	\$1.19	
4-16	1	16	3	No. 3015	\$1.19	
5-08	1 1/4	8	4	No. 3018	\$1.32	
5-16	1 1/4	16	4	No. 3019	\$1.32	
8-10	2	10	4	No. 3907	\$1.91	

Special Antenna All-Band Tuner Inductance

(equivalent to S. & W. No. 3907 7 inch) 7" length, 2" diam., 10 turns/inch.  
**Price \$3.30**

References: A.R.R.L. Handbook 1961;  
"QST" March, 1959;  
"Amateur Radio," Dec. 1959.

Write for range of Transmission Cables

**WILLIAM WILLIS & CO.**

PTY. LTD.

Manufacturers and Importers  
77 CANTERBURY RD., CANTERBURY  
VIC. 3126 Phone 836-0707

## NEWS FLASH.....

**FLASH!** We are happy to announce that previous Customs requirements of Amateur License, and copies of signed order are no longer required for purchasers of INOUE-ICOM VHF Transceivers **50-54 and 144-148 MHz.**

Consequently there will be increasing availability from stock of popular INOUE lines. Prices have remained unchanged for the popular IC22 and IC60.

IC22 with 2 channels	\$198
IC60 with 2 channels	\$220
IC30 (430 MHz)	\$370

All prices include Sales Tax and delivery anywhere in Australia.

**MAICO ELECTRONICS**  
MOUNT STREET, HEIDELBERG Ph: 45 2615  
TELEX 32720

**MODEL HK-701.** Heavy Duty De Luxe Hand Key, fully adjustable, ball bearing shaft, plastic protective cover. Mounted on heavy non-skid poly marble base. Price **\$18.00**  
Base dimensions 168mm x 103mm.



**MODEL MK-701.** Manipulator Paddle (Side Swiper) key. A superb action unit for electronic keying. Price **\$22.50**  
Base dimensions 154mm x 84mm.



**HY-GAIN** (USA), from BAIL ELECTRONIC SERVICES. We are pleased to announce that our latest shipment of Hy-Gain antennas has now left America and is expected to arrive about the middle of this month. The shipment will include Tri-band beams, Quads, monobanders, trap verticals, baluns, lightning arrestors, an assortment of 11 m antennas and beams including mobile and boat antennas, VHF beams and verticals.

**ROTATORS** from **CDE** (USA), models **CD-44** medium duty, and the heavy duty **HAM II** are now expected around end of this month or early September after delayed shipment. Also, we now have available the **BARLOW-WADLEY XCR-30** receivers, and a new batch of 24 hour digital clocks AC and battery types. And, last but by no means least (handy to have around when the band goes dead, or a nice gift for the XYL!) a very excellent AM/FM digital clock radio with music or buzzer alarm, slumber switch, etc., 230V AC, in teak finish, only **\$65**.

The **KW** antenna couplers are sold out except for a few **KW-109** & **KW-160**. The **KW-109** is a higher power version of the **KW107** @ **\$188**, and the **KW-160** is an "L" network single wire feeder coupler especially for 160 m, **\$38**. It is also available on 80 & 40 m. Another **KW** shipment is on order and we have been promised prompt despatch on this one. We do have in stock plenty of **KW** multi-band dipole traps, **KW-103** SWR/Power meters, baluns, and a few **KW-108** monitorscopes and dummy loads.



## ELECTRONIC SERVICES

60 Shannon St., Box Hill North, Vic., 3129.

Ph. 89-2213

OLD MITCHELL RADIO CO., 59 Albion Road, Albion, 4010  
N.S.W. STEPHEN KUHIL P.O. Box 56, Mascot, 2020

Ph. 57 8830  
Ph. Day 667 1650  
A.H. 371 5445

S.A. FARMERS RADIO PTY. LTD., 257 Angus Street, Adelaide, 5000  
W.A. H. R. PRIDE, 26 Lockhart Street, Como, 6152

Ph. 23 1268  
Ph. 60 4379

## BOOKS OF INTEREST FOR AMATEUR OPERATORS

DATA PUBLICATIONS—AUDIO AMPLIFIERS .....	\$1.90
PHILLIPS—1974 POCKET BOOK .....	\$2.00
DE MUIDERKRING—TRANSISTOR EQUIVALENTS, 8th Edition .....	\$4.95
RCA—SOLID STATE SERVICING (Radio, Recorders, Hi-Fi, etc.) .....	\$5.95
RCA—RECEIVING TUBE MANUAL .....	\$3.75
RCA—COS/MOS INTEGRATED CIRCUITS MANUAL .....	\$3.75
J. M. FROST—HOW TO LISTEN TO THE WORLD .....	\$4.95
ARRL—THE RADIO AMATEURS HANDBOOK (1974) .....	\$6.95
R. G. HIBBERD—INTEGRATED CIRCUIT POCKET BOOK .....	\$8.30
PHILLIPS—FAST RESPONSE PHOTOMULTIPLIERS .....	\$3.45
PHILLIPS—RECTIFIER DIODES .....	\$3.45

ADD POSTAGES: LOCAL ..... 35c

INTERSTATE ..... 75c

## McGILL'S AUTHORISED NEWSAGENCY

Established 1860

187-193 ELIZABETH STREET, MELBOURNE, VIC., 3000

"The G.P.O. is opposite"

Phones 60-1475-6-7

# QSP

Keeping up good communications between city-based Councilors and country zone members is a problem which besets all Divisions. In an attempt to bridge the gap, Victorian Division Councilors have embarked on a scheme to regularly visit and hold Council Meetings in the Zone centres. In addition, "Advisory Council" meetings — subsidised by the Division — are held in Melbourne, with representatives attending from all country zones. The move has been an instant success.



VK3 Councilors on a weekend flying trip which took in Horsham, Mildura and Canberra. L to R: Pilot, Russell Kelly (VK3NT) Fed Councilor, Mike Goode (VK3BDL) Treasurer, Phil Fitzherbert (VK3FF) Secretary, Peter Williams (VK3JZ) President. Remaining passenger — Mike Trickett (VK3ASQ) V. President, took the photograph.

## AR COSTS

Ever thought what it costs to bulk post AR to us in Australia? A year ago the average annual cost per member was a little over 42 cents. Today it is 84 cents, next year it will be \$1.08. The cost of printing AR has been comparatively steady during the past year at about \$3.42 per member but with rising costs of wages and paper this could be as much as \$4.25 by next year. All the other costs incidental to getting AR into distribution are also rising.

## EROSION

Jack Hum G5UM in Rad. Communications, May 1974, includes in his Four Metres & Down column a note from 9M2DQ saying "since last October the 9M2 men had lost the whole of the 2m band, an action apparently the work of a combined Brunei-Malaysia-Singapore frequency allocation board". This is a little near to us and bodes ill for amateurs at the next ITU Conference. Pressures from the "Third World" powers might already be manifesting themselves.

## IARU FINANCES

QST for Mar. '74 quotes "The International Amateur Radio Union has operated since its foundation in 1925 without any treasury or funds of its own. ARRL has underwritten the administrative costs of a headquarters operation, and most work elsewhere has been on a volunteer basis. With the establishment of regional organisations, however, it was decided that each area should finance its own activities, and this has been done by an assessment of a nominal amount per individual licensed amateur member levied on each member society. It is only natural that many ARRL members appraise the worth of their dues mostly on the basis of tangible returns — primarily receipt of QST. More discerning individuals additionally recognise the necessity of supporting those further services which are of collective benefit to all amateurs — regulatory representation, information sources, public relations activities, training aids, code practice and such. But it is unlikely that many are aware of ARRL contributions each year (towards) the operation of the Region II organisation. The purpose remains closer liaison between our organised groups for a stronger amateur radio — one better able not only to retain our bands at future frequency conferences, but enhancing the likelihood of some additional HF space to provide for growth".

## AMATEUR FREQUENCIES

"However, in the vital omnipresent role in our lives which communications and electronics involve us on a national basis, would you believe that amateur radio ranks close to the bottom". Excerpt from an address by W4BW, A. Prose Walker, Chief of the Amateur and Citizens Radio Division of FCC, as quoted in QST March '74. Later on in his talk W4BW quoted the "box-score" of allocations to major service categories between 3 and 30 MHz as follows —

Radio Astronomy	20 kHz	—
Aeronautical	1770 kHz	8%
Broadcasting	2150 kHz	10%
Amateur	2600 kHz	13%
Maritime	3650 kHz	50%
Fixed	10157 kHz	18%

"It is up to us", he said, "to find every way conceivable by which amateur allocations may be not only preserved, but improved throughout the HF spectrum".

## LICENCES — VR1

If you should ever visit the Gilbert & Ellice Islands it is interesting to observe that the Colony is tied to the United Kingdom with regard to the issue of amateur licensing. This also includes Ocean Island under the call sign group VR1.

## VHF PENETRATION INSIDE BUILDINGS

Brian Austin Z56BKW writing in Technical Notes for Radio 25, April '74, quotes from a CQIR Study Group Document 8/179-E relating to radio paging systems and initial experiments done by the BPO from the London Post Office tower 176m a.s.l. The relative media field strengths, normalised for the same effect radiated power at each frequency are shown under MHz, dB inside buildings and dB outside buildings as 80 MHz 0 and +13, 160 MHz -1 and -14, 460 MHz -4.5 and -15, 960 MHz -6.5 and -10.5, 1500 MHz -15 and -3 (reference level — 0 dB). These figures represent the trend rather than as absolute figures but still indicate that for equal ERP's signals around 480 MHz penetrate into buildings with greater signal strengths than those at any other frequency quoted.

## DEPARTMENT OF CUSTOMS & EXCISE

Quote C.G. 72/7864  
5 June, 1974

Dear Mr. Dodd,

I refer to your letter of 8 May concerning Amateur Radio Transceivers.

As advised verbally by Mr. Collins, the Department also realised that the reference referred to in my letter of 18 April imposed restrictions not intended to transceivers of a kind used by amateur radio operators in the 10 metre band which may go to an upper frequency limit of 30 MHz. Action has been taken to adjust this matter and attached for your information is a copy of the relevant Consolidated By-law Reference page which includes the amended reference.

In regard to by-law admission of transceivers not covered by the reference, the position is as outlined in my letter of 18 April. There will not be any necessity for importers to submit amateur licences, as applications received will be considered under normal by-law criteria.

As this letter supersedes that of 18 April I would prefer that it be used in the magazine and I have no objection to it being used in this regard.

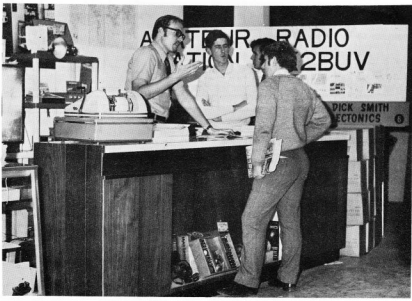
Yours sincerely,

P. A. Murphy,

Director, By-law Operations

## FREQUENCY BAND LOSSES

Writing in Microwaves in Rad. Communications, May '74, Dain Evans, G3RPE comments — "The news from France is bad. They have recently lost the use of the 1215-1220 MHz and 1280-1300 MHz parts of the 23cm band. The allocation 433-434.5 MHz has also been withdrawn. Operation in the whole of the 13cm band from 2300-2450 MHz is no longer permitted except with special authorisation, and then only from specified sites. There are also geographical limitations on the use of the 5750-5770 MHz sub-band".



17,000 new amateurs in Australia? That's how many there would be if everyone who received brochures on amateur radio at the mid-May "Sydney Morning Herald's" second annual hobbies exhibition applied for a license. The brochures contained information on soldering, kits and amateur radio and were provided by Dick Smith, a leading electronics centre in Gore Hill, Sydney. Tom, VK2ATJ / WATDPO, left, manned the booth for 70 hours along with members of the University of New South Wales Amateur Radio Society, VK2BUV. Several hundred genuine enquiries concerning amateur radio licence procedures were answered as well as describing amateur radio in general to several thousand individuals. Numerous individuals had never even heard of amateur radio showing that considerable publicity is needed for the hobby.

# An SL600 series SSB transceiver

BRIAN D. COMER, G3ZVC  
Plessey Semiconductors, Wiltshire, England

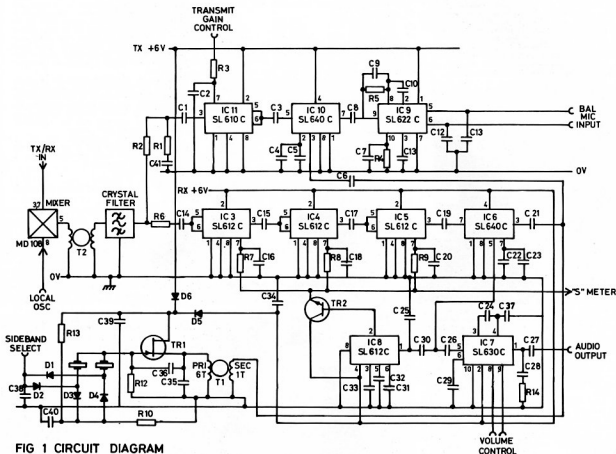


FIG 1 CIRCUIT DIAGRAM

## Component List:

IC3, IC4, IC5  
IC7  
IC9

D1, D2, D3, D4, D5, D6  
Q1  
Q2

Filter

R1, R3, R7, R8, R9, R11  
R4

R6

R12

C1, C2, C3, C4, C11, C12, C22  
C6, C14, C15, C17, C19, C21

C9

C13, C25, C37, C39

C24, C28, C38, C40

C29, C30

C34

SL612C  
SL630C  
SL622C

IC6, IC10  
IC8  
IC11

SL640C  
SL621C  
SL610C

IN4148 or similar low capacitance Silicon switching diode.  
2N3819 or similar N channel JFET.

2N706 or similar low cost Silicon NPN transistor.

S.E.I. QC1246AX with sideband crystals (or K.V.G. XF-9B)

100 ohms

30 K.

51 ohms

100 K.

1 nF WeeCon.

100 pF Ceramic

47 nF WeeCon.

100 nF WeeCon.

10 nF WeeCon.

1uF Bead Tantalum. C31, C33 100 uF 6V Bead Tantalum.

500 uF Al Electrolytic. C35, C36 68 pF Ceramic.

R2

R5

R10, R13

430 ohms

1 K.

330 ohms

C5, C8, C23, C26 10 uF Bead Tantalum

C7, C32 47 uF Bead Tantalum

C10 2 uF Bead Tantalum

C16, C18, C20 4.7 nF WeeCon.

C27 150 uF 6V Al Electrolytic

100 uF 6V Bead Tantalum.

500 uF Al Electrolytic. C35, C36 68 pF Ceramic.

Mixer.

Anzac MD108 Hot carrier diode ring mixer.



the transmit supply. If only a receiver is required the components R1 and R5 inclusive, C1 to C13 inclusive, C40, and the semiconductors IC9, IC10, IC11, D5 and D6 must be omitted, a wire link connected where D5 was, and a 500 ohm resistor connected from the filter end of R6 to earth.

The layout of the board is critical and changes of printed circuit design will almost certainly lead to instability unless double-sided board is used. The design shown may be built on double-sided board quite safely.

The components used in the original are given in the list below. Bead tantalum capacitors are used where possible for their small size but since they are hard to obtain in high capacitances at high voltages aluminium electrolytics have been specified in three places. The WeeCon capacitors specified may be replaced with other miniature high-K ceramic capacitors but the values of any components should not be altered without very good reason. The resistors are all 1/4 W 10% types.

Transformer T2 is made on an ITT CR 071-8A ferrite core.\* Four 5 cm lengths of 26 swg wire are twisted together and two turns are wound on the core with the twisted wire. The ends are then opened and three windings are connected in series for the filter winding and the fourth is used as the winding connected to the diode ring. Transformer T1 is wound on a core of the same type and has a 6 turn primary and a single turn secondary.

## CONCLUSION

The circuit diagram of the system is shown in Fig 1 and a block diagram of its use in a single band transceiver in Fig 2. Obviously it may be used in many different transceivers, the one in Fig 2 being the simplest. Fig 3 is the printed circuit master and Fig 4 shows the component placing.

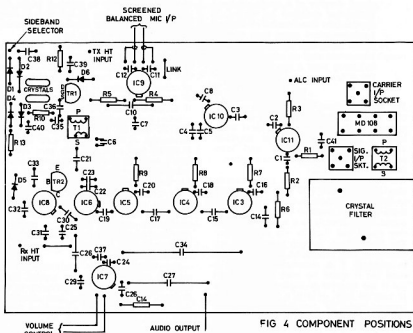


FIG 4 COMPONENT POSITIONS

\*Any small ferrite or iron dust toroid with cross-section greater than 3 square millimetres and diameter between 7 and 12 mm, capable of working at 9 MHz, may be used. Square-loop materials, however, are not suitable.

This transceiver is probably the simplest which may be made using the SL600 Series but its performance is not compromised. It has a sensitivity of better than 0.5 uV for 10 dB S/N, it can handle signals of over 200 mV rms at the diode ring with minimal intermodulation, and the board uses less than 500 mW on transmit or receive. It has been designed so that anyone with basic technical competence but without previous experience in SSB transceiver design can build a successful SSB transceiver. Probable users are both amateurs and small firms wishing to enter the SSB transceiver market.

## technical articles for ar

- preferably typewritten manuscript, but hand-written acceptable.
- double spaced, one inch margins, one side only of quarto or foolscap sheet.
- spelling and grammar entirely optional; editorial staff will polish.
- drawings made by AR staff from sketches submitted.
- good, clear, glossy photos welcomed with open arms. do not forget captions.
- send it **now** to:—  
P.O. Box 2611W,  
Melbourne, 3001.

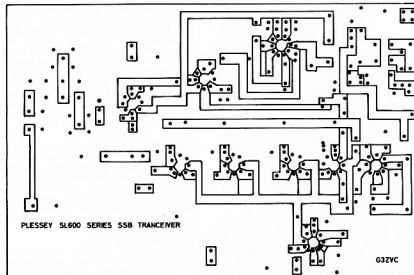


FIG 3 PCB LAYOUT

# DX adventure on Willis Island

The following is a resume of a six month stay at Willis Island Meteorological Station by Kevin Collins, VK4TU/VK9ZC.

Willis Island is the southernmost of the three small islands comprising the Willis group. It is approximately 280 miles ENE from Cairns, past the Barrier Reef towards the centre of the Coral Sea.

It was originally manned in 1921 and used as an OTC Coastal Radio station. Over the years its role was changed to a weather station under the control of the Commonwealth Bureau of Meteorology.

The island is only 13 acres in area, 500 metres by 150 metres. It is abundant with bird life and king size turtles sometimes come ashore.

The weather station is manned in six-monthly shifts by four MET officers, comprising an OIC and three observers. One of the observers is a Radio Technical Officer (RTO) and it was in this capacity that Kevin served. He was on the island from June 1973 to December 1973 and operated on the amateur radio bands with an FT101 in his spare time.

Before commencing the 'expedition', a familiarisation course was held in Melbourne. This covered the Radar installations, communications and other electronic instruments on the island. This was followed by a week with the Commonwealth Department of Works in Townsville for maintenance procedures to the refrigeration, electrical and power installations.

From Townsville, Kevin travelled to Cairns, where he met the other three members of the crew. They were the OIC, John Goonan, and MET observers Trevor Haslam and Jim Milne. The ship, the 'Cape

Morton' took them to Willis Island from Cairns.

Kevin had obtained permission to operate Maritime Mobile on the journey to the island. Despite the 'last night' on the land revelations, he was up on the After Deck at noon the next day. Power on board the Cape Morton is 220V DC, but this was overcome temporarily by borrowing a 12V battery from the ship's radio officer. Unfortunately, the battery was only partially charged, but it kept the FT101 on the air for six contacts before it flattened. The antenna used was an extant  $\frac{1}{4}$  wave whip.

With so much to do on arrival at the island, it was a week before Kevin was able to get on the air. Initial amateur contacts from Willis Island were made with the tank whip, then dipoles for 20, 40 and 80 metres. He had taken the materials for a spider quad on 20, 15 and 10 metres, and this went into service in late July. Approximately one month later, the SWR on the quad climbed appreciably, to over 3 to 1. The quad was taken down and an inspection showed that the balun windings had eroded, due to the salt water atmosphere.

Kevin had decided on a single coax feed within the balun attached to the 15 metre loop. Two short lengths of 72 ohm balanced line were attached to the 20 and 10 metre loops. This system worked quite well and the SWR on the three bands was not greater than 1.5 to 1.

After repairs and sealing of the balun were carried out, the quad was mounted on a wooden tower with the centre approximately 10 metres above the ground. Rotation of the quad was by means of a very crude "Armstrong method".

The whole system performed with excellence until about 2 weeks before the end of the tour, when the 15 metre loop collapsed. A further victim of the corrosion problem on the island.

Kevin's operating times were somewhat erratic, having to fit in around the TV programmes. TV reception was spasmodic, to say the least, relying on "Ducting" from the mainland. It was found to be best with a medium level Temperature Inversion.

An idea of what quality the night's programmes could be expected was ascertained from the daily Radiosonde Plot of the upper atmosphere, temperature and humidity.

TV reception was primarily from CH3 Townsville, using a VK9ZC "home brew" 6 element Yagi with a mast head pre-amplifier. A similar design 11 element Yagi was cut for CH9 to try reception from Bellenden Kerr (Cairns). This proved that a useable signal was present if about another 10 dB gain could be achieved. After much experimenting with long wires, V's etc., good TV reception was obtained by using a stacked Rhombic with approximately a 200 foot long axis.

Theoretically, this gave about 24 dB gain at 200 MHz, and was found to be by far the best for long range weak signal TV reception.

The stacked Rhombic gave watchable signals about 5 nights per week.

The "friendly contest", the RD, really proved itself on the island. Kevin was relieved of his duties for the 24 hours, provided he stayed at the microphone. It was this 100 per cent support from the rest of the crew that enabled him to win the VK9 segment of the contest.

Apart from TV and amateur radio, the only other recreation on the island is a BC band radio, a stereo record player, bird watching and swimming.

There is no contact with the families of the men on the mainland except for a weekly 100 word radio Telegram link with Townsville. This proved to be futile.

A supply plane flew over each 3 months to drop newspapers and essential supplies. On the first drop, the newspapers landed in the 7 foot high surf approximately 100 yards off shore. A successful swimming retrieval was made, and the slightly moist, but readable newspapers had arrived.

Once word got around of the new DX station operating, it was only a matter of time before the dogpiles started. Sometimes for an entire evening through until dawn.

As can be appreciated, that with the heavy QRM, Kevin reported that it sometimes took 15 minutes to extract a call sign and work a station.

Kevin states emphatically that he was



very fortunate to have a QSL manager in the person of Ken McLachlan VK3AH, who was ably assisted by his wife Bett. Many pleasant QSOs between the McLachlan QTH and Willis Island helped to make the tour a very enjoyable one, and their generous assistance was greatly appreciated by the lone operator.

Kevin and Ken had arranged daily schedules on 14200 for transcribing of the VK9ZC log. Most of the QSL cards for the entire log have been sent out.

In all, 2440 QSOs were made with other amateur stations and 112 countries were worked.

As the lonely weeks went by, John Goonan asked Kevin if it would be possible to arrange for his wife Jane, who was living in Melbourne, to talk to him on the amateur band.

It was so arranged by Ken VK3AH to make contact with Mrs. Goonan and organised a local station near her home at Oakleigh, to make the contact.

Bruce VK3ASE in Aspendale, volunteered to allow Jane Goonan to talk to her husband on the island.

A check with the local PMG Radio Branch confirmed that the transmission could take place provided the provisions of Section 83 of the PMG Regulations Handbook were strictly adhered to. This was duly done.

On Sunday the 29.7.73 Jane and John spoke to each other for the first time in 2 months. Although band conditions at the time were not brilliant, 5 x 5 signals were exchanged and the QSO lasted for 20 minutes.

Both parties were elated at being able to converse in this manner, and subsequently a regular Sunday morning sched. was arranged for the remainder of the Willis Island tour.

Power on the island is continuous 240V AC supplied by 1 of 3 20KVA diesel alternators.

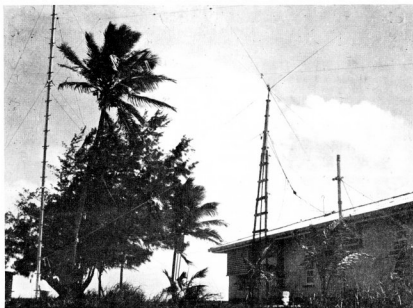
Commercial HF equipment is 2 x 500 watts PEP Racal Transmitters and RACAL receivers, and a 100W PEP emergency transceiver. The main link is with Townsville, but during the tour, an experimental "V" approximately 300 feet long was erected beaming towards Gladstone/Brisbane and brought Willis Island into the coastal cyclone emergency net.

The wind tracking Radar, a Decca WF-2, is used 4 times daily at 6 hourly intervals to collect wind data in the upper atmosphere. The radar tracks corner reflector targets tied to hydrogen filled balloons. The hydrogen is generated each day from caustic soda and Ferrosilicate.

On returning to the mainland, Kevin said that all in all, the tour was a great success, Amateur Radio wise.

He hopes to make a special return journey to the island for one week as a DXpedition, but the dates have yet to be arranged.

At the present time, there are no licensed amateurs on Willis Island. — VK3ASE ●



Some of the antenna used by VK9ZC on Willis Island.

## PALEC VCT MODIFICATIONS

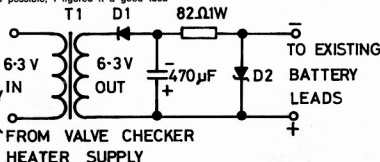
JOHN H. McCONNELL, VK3RU

23 Stewart St., Ormond, 3204

In the AR issue of April 1966 on Page 2, an excellent article by G. Wall, on the modernising of this instrument to accommodate the emission testing of modern valves was presented. The modification was carried out at this QTH on my "VCT" and has certainly updated and extended the usefulness of this function.

Since most of the functions of the instrument require it to be connected to the AC mains, and complete portability is not always possible, I figured it a good idea

to energize the "Ohm x 1", "Ohm x 10" and "Low Ohm" ranges from the instrument power supply because the 4½ volt dry battery used for this purpose always seemed to be flat when these ranges were required. A very low resistance supply source must be used and the circuit shown in the diagram is completely satisfactory and can be accommodated in a convenient corner or space within the instrument case. ●



T1—Isolating transformer. Wound on small speaker transformer core. Both windings use No. 30 B & S enamel wire. No. of turns for both Primary and Secondary given by formula:—

8.8

6.3 x core area in square ins.<sup>2</sup>

Interleave laminations when assembling.

\*Small leg of core taken for core area.

D1—Low voltage silicon power diode (25 PIV minimum).

D2—4.7 volt Zener diode (low wattage type).



# Adding FM to the FT200

J. W. K. Adams, VK5SU  
34 Lambell Street, Ceduna, 5890

During the 1972 VHF DX season an FT200 transceiver was used with transmitters to transmit CW, AM, SSB and FM modes. The word soon went around that an FT200 was producing FM and many questions were asked by interested amateurs. In response to requests for information (and after much arm-twisting by the Editor) the following article has been prepared. This deals specifically with the FT200 but could be applied to other transceivers in the Yaesu Museu series.

## Circuit

The modification is very simply achieved and involves the varicap diode clarifier circuitry associated with the 5-5.5 MHz VFO and normally used for offsetting the receiver frequency from the transmit frequency by up to  $\pm 5$  kHz. This is achieved by varying the dc voltage on a 1S1007 varicap diode (D104) by means of the re-

ceiver clarifier control. When transmitting, fixed bias is provided for the varicap diode from a voltage divider network and the clarifier control is inoperative.

## Transceiver Modification

The clarifier circuit and the modification for FM are shown in Fig. 1.

First mount an RCA chassis type phono socket or a Jabel spring loaded terminal post in the vacant hole marked "AUX" on the rear of the FT200 chassis. Mount a three tag, tag strip at the socket and solder in the .0047  $\mu$ F RF by-pass disc ceramic capacitor and the .1  $\mu$ F polyester capacitor. The latter isolates the external audio driver amplifier from the dc voltage present on the varicap diode.

Next, run a short length of PVC covered shielded microphone cable from the tag strip round and through the chassis to the clarifier connection point on the side of the VFO box (Fig. 2). Earth the cable shield to the VFO earth tag and at the three tag strip.

This completes the modification to the FT200.

## External Audio Amplifier

There is plenty of scope here and individual requirements will dictate the complexity of circuitry and whether valves or transistors are used.

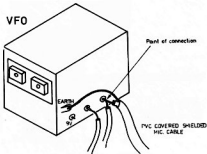


FIG. 2 FT200 VFO CONNECTIONS

It is important that the amplifier has a low impedance output as the audio frequencies are shunted by .01  $\mu$ F by-pass capacitors in the varactor diode circuit. Originally, to be operational in time for the 1972 DX season, the three ohm output from a tape recorder monitor amplifier was used as a source of audio.

The valve mic amp shown in Fig. 3 is currently in use (lots of valves still in the junk box), and is built into an FM/AM tuneable IF receiver. Carrier deviation of  $\pm 10$  kHz is easily obtained and the audio quality is excellent.

The output transformer used came from the popular disposals SCR-522 VHF transceiver. The characteristics and pin connections are as follows:

## Audio Output Transformer 296:

Primary — pins 1 and 2; plate load.

DC resistance — 870 ohms.

Impedance — 15,000 ohms.

Secondary — pins 4, 5, 6 and 7; audio output.

DC resistance — 390 ohms.

Impedance pins 4-7, 4,000 ohms.

Impedance pins 4-6, 300 ohms.

Impedance pins 4-5, 50 ohms.

HT choke — pins 2 and 3; HT filtering.

DC resistance 340 ohms.

Rating 6H/50MA.

Some power is wasted in the terminating resistor but this is included to maintain a load on the transformer.

The output should be shorted or disconnected when the FT200 is used for CW/AM/SSB otherwise unwanted FM of the carrier can occur on transmit and receive.

## Operation

Tune up and operate, as for AM operation.

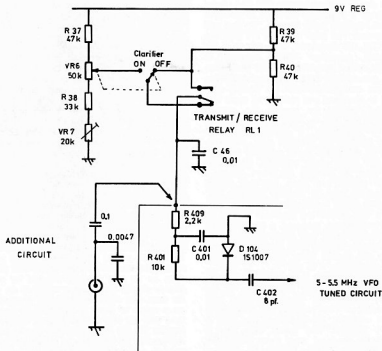


FIG 1 FT200 CLARIFIER CIRCUIT

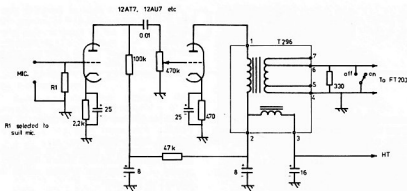


FIG. 3 MICROPHONE AMPLIFIER

Turn down the FT200 microphone gain control to prevent unwanted modulation.

#### Receiving FM

The FT200 has not been modified to receive FM. A transistorised audio driver amplifier and a 9 MHz IF strip with discriminator or phase lock loop detector could be incorporated without too much difficulty. The 9 MHz IF signal should be taken from the 6U8 receiver mixer, before the sideband filter. I take the 28 MHz IF output from the FTV650 6 metre transverter to a minimum loss resistive splitting network so that the FT200 (receiver) can be used simultaneously with the tuneable IF AM/FM receiver or other tuneable IF receivers.

One advantage of this multiple receiver/mode set up is the ability to monitor amateur beacons, TV stations and net frequencies whilst in QSO on another frequency. VOX or PTT operation is used.

#### Reference

1. "Adding FSK to the FT200". VK3ASV "AR" September, 1972.

## Gleanings from a trip to ZL

From GREGOR COX, VK3ZCG  
Per GEORGE, VK3ASV

**After much deliberation and farming out of harmonics, together with the XYL we boarded a DC10 on 9th of February and arrived three hours later in Auckland.**

Friends met us at the airport and then drove south a distance of 60 miles to Huntly, a major coal winning district. Prior to leaving VK we had determined the various repeater and simplex frequencies in use in the area of our proposed visit, and had acquired the crystals necessary for operation. Repeaters are prefixed with letters A, B, C, D, and for those interested, operate with the following frequencies.—

Output	Input
A 145.6 MHz (Old. Ch.1)	146.30
B 145.65 MHz	146.35
C 145.7 MHz	146.40 (Ch.4)
D 145.75 MHz	146.45

Simplex channel 146.00 MHz is also used quite a lot.

For operation in ZL it is necessary to obtain a licence, which is issued upon production of normal **Operator's Certificate and current licence**, plus a fee of \$3.00 together with the application form filled in. Any intending visitors who wish to operate, and save time, should write for the application form to: Chief Radio Inspector, 150 Hobson Street, Auckland, New Zealand. Return completed form and fee, and normally within a few days the licence is issued.

**Some important points:** All "Z" calls

are issued with a "T" call which unfortunately does not allow operation below 144 MHz (No 6 Metres). Unless Full Calls have obtained a licence in the days of 14 WPM Morse, nothing better than a "T" Call will be issued. The gear used on the trip was an STC 131 Carphone, with AC pack for portable operation. While portable in Huntly, with a ground plane nine feet above the ground, 20 separate stations were worked through Channel (as above) situated in Auckland and running 15 watts into vertical dipole. By moving the ground plane a few feet we were able to operate through a channel "B" repeater some 30 miles away in the Walkato area, also running 15 watts but using collinear dipoles.

A car being made available, we set up the gear for mobile operation, using a gutter mount 5/8 whip. We had hoped to operate through another Channel "B" repeater in the Palmerston North area during a trip around the southern section of the North Island. However, a slight mishap not discovered in time prevented any communication; feeding coax through the door does not always work, particularly when the door chops it in two.

Later, we moved north, about 170 miles above Auckland, and had access to another vehicle, and found operation very satisfactory. The repeater at Whangarei is on channel "B" frequency and runs 6 watts. Contact was made with only 2 operators, as most were away during the day time. All told we worked 33 separate stations during the brief visit, and part of the time was spent near Kaitiaki which is well out of range of any repeater.

A few days before our return, we did work a ZL2 from Nelson (South Island) who was getting to the Auckland repeater during a brief period of inversion. All repeaters mentioned were FM, although we understand there are still a few AM systems on the South Island, which are eventually to be phased out. During an eyeball with a Full Call operator in Auckland, mention was made of interest in and listening on 144.1 MHz ssb. Apparently contacts have been made with VK2s on this frequency, and contact with any stations would be welcomed.

Visitors are made most welcome, on the air and by personal contact. There were many meetings we could have attended, had there been time.

Apart from radio, the place is very scenic. The roads we saw were very good, although sometimes slow because of the many curves. The Government's absolute speed limit of 50 mph was brought in as an economy measure, together with the closure of service stations over the weekends. It has been indicated that during the winter period all weekend travel will be barred apart from road users with permits, so we may spare a thought for our friends across the Tasman who rely on us for their fuel supplies. Duty free shopping on a range of items is available in Auckland City as well as the Airport, however articles are not made available immediately but placed on the ship or plane of your journey and made available at destination. Authority to purchase is recognised by production of travel ticket and Australian Currency.

## Commercial Kinks

with Ron Fisher VK3OM

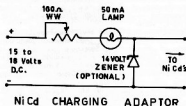
3 Fairview Ave., Glen Waverley, 3150

Continuing with our series devoted to the KEN KP202 hand-held two metre FM transceiver, this month some ideas on chargers and charging adaptors for nickel-cadmium batteries.

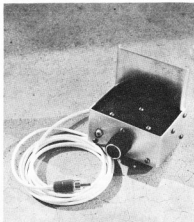
First, a charging adaptor designed and constructed by Bob VK3BU. This little unit is ideal if you already have a DC supply capable of delivering 15 to 18 volts at about 100 milliamps. It would also be suitable to use with a twelve volt car system under charging conditions. Another source of voltage often found around the home is junior's model train or slot car power supply. Make sure that the polarity is right and perhaps a series diode might be good insurance. Also a 1000 mF.d. electrolytic across the output of the power supply would be worth while. The series diode in the adaptor serves two purposes. It acts as a charging indicator and also as a current limiter. In operation the rheostat should be adjusted so that the globe lights to about half brilliance with the batteries in a discharged condition.



The KP202 sitting in the VK3BU charging adaptor.



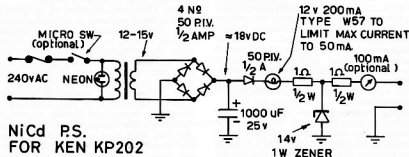
The mechanical construction of the adaptor should be fairly clear from the illustration. It was bent up from light gauge aluminium, the contact studs are simply two 1/4 inch round head screws mounted on a piece of bakelite or similar insulating material.



A close-up of the VK3BU charging adaptor.



The KP202 in the VK3ADP charger.

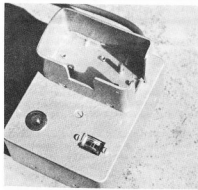


Now to the second of the two chargers. This was designed by Don VK3ADP and is completely self contained with built-in power supply. The mechanical basis of this is a medium size die-cast box with the KEN holding bracket bent from a piece of perspex after careful heating with either boiling water or a blow lamp. After attaching to the diecast box the whole assembly was sprayed with silver enamel.

Don's unit features quite a few deluxe items. Firstly, a micro switch in the AC line actuated when the Ken is placed in the cradle. A small meter salvaged from an old Japanese tape recorder serves to indicate charging current. The zener diode across the output conducts when the battery voltage reaches 14 volts and thus prevents overcharging.

In conclusion, a few words about charging nicads:

When on charge, battery temperature should never exceed 38 deg. C (100 deg. F) Check on published data for your particular batteries for maximum allowable charging current.



A close-up of the VK3ADP charger clearly showing the AC micro-switch actuator.

The required charging time can be calculated by dividing the amp-hour rating by the charging current, then multiply this by 1.25.

Batteries in series should not be charged unless they are of the same type and in the same state of discharge.

# Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

## TWO METRE FM REPEATERS — FACTS AND FALLACIES (PART 2) HOW THEY WORK

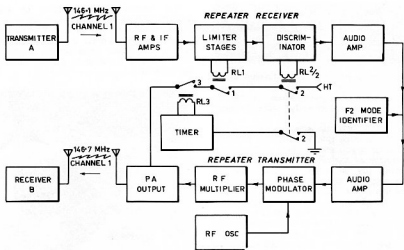
The two metre FM repeater shown in block form in the diagram may or may not exist in Australia, but the general principles still apply. The repeater consists of a receiver and transmitter co-sited and designed to operate with one another at the same time — when a signal comes in of course. The receiver operates all the time and it controls the operation of the transmitter.

The repeater receiver is similar if not the same as the one that you might use to listen to the repeater on. It has the normal RF and IF amplifiers, followed by the limiter, discriminator and audio stages. The limiter and discriminator are shown modified in my diagram. The limiter stages provide a negative voltage at their grids if valved, which can be sampled to drive a relay switching stage. When a reasonable signal is received this relay stage operates because quite a high negative control voltage is developed in the limiter stages. When relay 1 pulls in it closes the first of the series switches in the transmitter HT supply line.

At the same time or nearly so the noise amplifier associated with the discriminator switches on the audio amplifier and also causes relay 2 to pull in. As a signal is received into the discriminator the internally generated noise of the receiver amplifiers is quietened down and causes this noise amplifier circuit to work. So that the good work of the noise amplifier is not spoiled by the received audio on the signal, which can be considered to be audio noise, the band pass of the noise amplifier and the communications audio amplifier are different. The noise amplifier only responds to audio noise above about 3 kHz whereas the communications audio amplifier only responds to audio below 3 kHz.

The discriminator relay once it pulls in switches on the interval timer causing the third relay to operate and so completes the HT line to the transmitter. The input signal to the repeater is now fed to the transmitter which now radiates a signal modulated by the audio signal fed to it from the receiver. This output signal by necessity must be on a different frequency to the received signal otherwise the receiver would not be able to hear any signal other than its own transmitter.

After a predetermined time, say 2 to 5 minutes the timer circuit releases relay 3, so causing the transmitter to go off the air as it now has no HT. This is the ideal



thing of course to train the chaps who like long monologues, to give other users a fair go. It is also valuable should some carrier come up on the input frequency from a defective service or through someone sitting on their microphone. The transmitter will stay off air until there is a break in this continuous carrier.

The F2 mode identifier is a device fitted to some repeaters to indicate periodically which repeater is being worked through. It sends out the call sign in morse code. To my knowledge only one of the VK3 repeaters has an automatic identifier, but I understand repeaters in other States do have these fitted.

As can be seen, a repeater is not such a complicated device as many might have thought — in principle anyway. Repeaters incidentally are designed with the notion that they must have safeguards inbuilt so that should anything go wrong no damage will occur to the equipment nor will it lock onto the transmit mode. Therefore more care is necessary in the design and construction of a repeater than perhaps the average piece of amateur equipment.

The input and output frequencies on the 2 metre band are spaced 600 kHz which is quite close in frequency relatively. If the transmitter and receiver are co-sited. To overcome this problem many of the repeaters are fitted with cavity resonators or filters in their transmission lines. These filters have a high Q and are used as either rejectors or acceptors of signals. It may be that acceptors are used, in which case the receiver has a filter fitted to its transmission line which only accepts its receiving frequency and the transmitter has a filter that only lets its intended transmission frequency out. If these filters are not used the transmitter tends to block the receiver and make it insensitive and so defeats the whole reason for having the repeater.

I hope this short discussion has been of some help to you in understanding FM repeaters. The operation of individual repeaters will vary from that described but not basically.

Next Month, the EMC edition — Electro Magnetic Compatibility.

## Intruder Watch

with Alf Chandler VK3LC

1536 High Street, Glen Iris, 3146

The following is a precis of the main stations reported in my quarterly summary of Intruders as at 30th June, 1974, and forwarded to PMG, RSGB, ARRL, HARTS, Singapore RC and KKAU — 21044-6 A1 4XZ — sending letter code, 0500-0730Z.

21155 A1 KLV — sending "CQ de KLV".  
14009 F1 XYZZ — Teletype read-out submitted.  
14023 A1 NAP — sending calls.  
14005 A1 PBJ — sending calls.  
14050-64 A1 OEBL — calling CBFN and sending 4 letter code.

14075 A1 UHF3 — calling CQ and sending 5 figure code.  
14250 A1 BCX24 — sending news in English.  
14335 F1 BZP54/BZP56 — Teletype read-out submitted — "Hainkua news agency Peking".

7010-3 A1 9QNF — calling WXJ4.  
7015 F1 "HMR56/HMF21/HME28/HMK71 freq. 11290/7015/13780/9404 kcs Pyong Yang vovv . . ." followed by facsimile.

7029 A1 KDL — sending "CQ de KDL".  
7040 A1 UQB — sending "CQ de UQB".  
3508 A1 6MFS — sending "ZUPT de 6MFS hj".

3608 A1 UQB — sending "CQ de UQB".

Any station sending "hj" can be identified as being in Red China. The MHR56 series situated in Pyong Yang in North Korea is annoying many Observers and I am endeavouring to persuade our authorities to institute a complaint. Unfortunately, the FCC in the US cannot initiate any complaint because the United States does not have diplomatic relations with North Korea, otherwise they would definitely issue a manifesto. The second harmonic of the above is heard at strength in the US, but I have had no reports of it being heard in Australia. The frequency would be 14350, and reports would be appreciated; as also would identification of signals heard on the following frequencies — A1 — 21140, 21150, 14050, 14140, 14163-7, 14210.

While travelling around the Orient recently I was fortunate in contacting and meeting personally some of the boys in Singapore, as well as in Darwin. I have promises of co-operation in Intruder matters from both these districts. However, I was unable to see anybody in Japan or in Hong Kong.

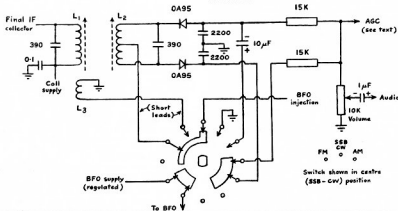
With the departure of Bill, VK2ZD, to Nauru, a vacancy has been made available for a Co-ordinator in VK2. I am hopeful that this will be filled in the near future.

# Try This

with Ron Cook VK3AFW  
and Bill Rice VK3ABP

## A MULTI-MODE DETECTOR

Some years ago the author built a moderately complex general coverage receiver. During the last few years it has been used mainly as a tunable IF for VHF converters, and may equally well be needed to listen to AM, FM, SSB or CW. The 455 kHz IF amplifiers can be switched to give bandwidths of 3, 10, or 30 kHz, as desired for the chosen mode. The multi-mode detector used has interested all who have seen the receiver, so it was thought worth publishing a description for the benefit of other receiver-builders.



Basically, it uses a diode envelope-type circuit for AM, changes it to a balanced-diode product detector for SSB and CW, and then to a ratio detector for FM. This is all achieved with one slightly unorthodox switch waver which should not be too hard to duplicate. AGC may be obtained as shown, for AM only, via a suitably long time-constant filter. There will be no AGC voltage at the correct FM tuning point, thus giving maximum limiting. However, the author preferred to use a different amplified AGC system which was effective on SSB also.

## IF TRANSFORMER DATA

- L<sub>1</sub>: 240 turns 38 SWG enamel scramble-wound length 3-16 inch
  - L<sub>2</sub>: 2 x 120 turns bifilar as above
  - L<sub>3</sub>: 60 turns wound over L<sub>1</sub>
- L<sub>1</sub> and L<sub>2</sub> are on one former, L<sub>3</sub> on the other, of a small Neosid dual transformer assembly. All windings are secured with beeswax.

method of destroying the temporary conductivity of the coherer by tapping it with a hammer driven by clockwork. Many others had also been investigating the subject, amongst whom Mr. Popoff rendered the decoherence automatic by placing the hammer in a relay circuit controlled by the coherer.

In 1897 Marconi appeared in the field, and caused considerable sensation by claiming to have solved the problem of practical telegraphy without wires over long distances. The English post office authorities took the matter up in conjunction with Marconi, and experiments were carried out in different parts of England, but with only partial success. Later Mr. Marconi applied M. Popoff's vertical wire "feeler", his previous experiments having been carried out by means of reflectors and tuning wings: he also improved the coherer and other details of the apparatus with a view of increasing its sensitiveness and power. He is still engaged on this work, and is by latest advances also reducing the height of the vertical wires whilst maintaining the effective distances. As indicating the practical advances which Marconi has made in this direction it is interesting to note that in 1897 he signalled between vessels in the Italian navy nine miles apart, using vertical wires 70ft to 100ft. long, in 1899 between Dover and Boulogne, 26 miles with a vertical wire of 110ft. and in the same year he signalled between two vessels of the English navy 64 miles apart, with vertical wires of 160ft. and 180ft., whilst he has since covered 77 miles with 140ft. of vertical wire.

Although Marconi has during the last few years almost monopolised the attention of the public in connection with wireless telegraphy, other experimenters have not been idle. M. Tissot, in France, signalled 35 miles over sea with vertical wires of 90ft., and M. Popoff, in Russia, also covered this distance, but used higher wires. As up to the present the height of the vertical wires at the sending and receiving stations have an important bearing on the distance which can be covered it was only natural that captive balloons and kites should have been used as a means of obtaining the necessary elevation, and Dr. Slaby, in 1897, by this means signalled 12 miles with wires 910ft. long. Marconi also last year signalled from Salisbury to Bath, 31 miles, using high kites to support his vertical wires at each place.

# Marconi and others

A reprint from the special issue of the Daily Telegraph devoted to the new Commonwealth of Australia. This is a portion from the section devoted to topics by current specialists.

THE DAILY TELEGRAPH  
WEDNESDAY, JANUARY 2, 1901  
WIRELESS TELEGRAPHY  
J. Y. NELSON  
Chief Electrician, G.P.O.

Wireless telegraphy in a practical form is the result of experimental research of very recent years. In the earlier experiments upon this fascinating problem, carried out by Sir William Preece between 1881 and 1894, with a view of telegraphing through space without the medium of a conducting wire, the electro-magnetic method was adopted. Early in 1894 two parallel wires were erected, one on each side of Loch Ness, with an object of ascertaining the

minimum length of wire necessary to transmit signals by means of induction from one wire to the other. Mr. Gavey who was carrying out the experiments proved that it was also possible to transmit speech through space, and trials showed that speech was possible across the lake a distance of 1.3 miles, between parallel wires, whose length was four miles each.

In 1888, however, Hertz carried out his famous experiments upon electrical waves, which have since been known as Hertz waves, but, owing to the absence of a sensitive detector or receiving medium for such waves, was unable to apply his discovery to practical purposes by the transmission and detection of these waves through considerable distances. Mr. Branly, in 1890, discovered the principle of such a detector in his "radio-conductor", which was subsequently renamed "coherer" by Oliver Lodge, in 1893, who had been working on the problem and hit upon the

## "SILENT KEYS — IN CONTEMPLATION"

In spirit they have not died,  
But have simply QSY'd.  
Old soldiers may just QSB.  
But the Ham's appointed place  
is on a higher frequency.  
Where DXers need no mode, rig  
To communicate a rig,  
Where QRN and static rise,  
is absent — as is QRN.  
Cause of such ignoble strife,  
— And while Earth's ops, contemplate,  
They, 'from up the log,' await  
On the infinite band,  
Where DX is eternal.  
And brotherhood, the kinship grand.  
Alan Shawsmith — VK4SS

# VHF UHF

## an expanding world

with Eric Jamieson VK5LP

Fairfax SA, 9535  
Times GMT

### AMATEUR BAND BEACONS

VK0	VK0RG, Macquarie Island	52.160
	VK0MA, Mawson	53.300
	VK0GR, Casey	53.200
VK1	VK1RTA, Canberra	144.755
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144.002
VK3	VK3RGT, Vermont	144.700
VK4	VK4W/2, Townsville	52.600
	VK4W/1, Mt. Mowbrall	144.400
VK5	VK5VF, Mt. Lofty	53.000
	VK5VF, Mt. Lofty	144.800
VK6	VK6VF, Perth	52.3015
	VK6RTU, Kalgoorlie	52.350
	VK6RTT, Carnarvon	52.900
	VK6RTW, Albany	144.500
	VK6VF, Perth	144.000
VK7	VK7RTX, Devonport	144.900
VK8	VK8VF, Darwin	52.200
P21	P29GA, Lae, Niugini	52.150
ZL1	ZL1VHF, Auckland	145.100
	ZL1VSW, Waikato	145.150
ZL2	ZL2VHS, Wellington	145.200
	ZL2VHF, Palmerston North	145.250
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400
JA	JA1GY, Tokyo	52.500

No advice of any alterations or additions to beacon list received this month. At this stage can only guess the VK0 beacons are as listed; no one disputes, confirms or denies their existence.

In fact, there seems nothing outstanding to pass on to you this time whatever, which is not unusual for this time of the year. However, don't forget to take a look at the "5 UP State of the Art Contest" which runs from 20/7/74 to 17/8/74, details of which were in the last issue. If you monitor 6 metres at least you might be surprised what can be heard at any time of the day or night. The 30th June was a case in point. It rained at this QTH all day, so some contacts were difficult. The contest was undertaken for 432 MHz, and the 6 metre receiver fell on 52.050 MHz. At about 0930 two weak signals were observed peaking east, but not identified. Channel 0 from Brisbane up to strength 7 at times throughout the day, but no signals, no responses to calls. But I'm not telling, something may have come out of it, that's the luck of the DXer, you must be there to work the DX when it comes through!

The other contest of importance is certainly the fairly well supported Remembrance Day Contest on the weekends of 17th and 18th August. I hope to see a big VHF log submitted from all States this year, remember, every VHF contact is worth 2 points to you and some operators overlook this fact. The HF gang might think about this one too. Plenty of you have at the very least FM equipment capable of VHF operation in the shack. Pick it up and give the VHF boys a go. After all, in most cases adjoining States on HF are worth only one point to a State, but VHF to VHF is worth two points to the State — I won't tell you why, you work it out for yourself. My suggestion to VHF operators and HF alike is to listen and call on the recognised calling frequencies if you are operating on the tuneable portions of the bands. Leave your receivers on 52.050 and 144.100 if operating HF and grab the VHF boys as they come up on the frequency. VK5 will be well organised this year for an attempt at three times in a row for a win, and by the general interest shown in the R.D. by the VHF boys they will win it!

As information is so scarce this month, I feel this is a chance to reprint a very good article from the "Victorian VHF-er" which concerns all VHF DXers, whether they operate on tuneable or FM. The article is headed "VHF, UHF, DX & ALL THAT" and reads as follows:

"There is an aspect of tropospheric propagation, over which some confusion may arise as to when the band is said to be 'open'. It may be true to

say that most DX contacts by amateurs occur during band openings, on the other hand, it is equally fair to say that simultaneous band openings and DX are seen in the same situation. When the band is said to be "open" it should be interpreted to mean "broadly open" and can be predicted with a reasonable degree of accuracy, conversely, very long haul DX results from a combination or blending of several distantly situated conductive mediums and occurs quite suddenly at no particular time, however, the both categories of DX have one thing in common, that is at each end of the path, close to the line of sight distance, there exists a medium with the right amount of refractive index enabling propagation enhancement. For the purpose of further explanation, it can be assumed, that the "broad open" band condition results from a single pattern situation and occurs relatively frequently as compared to the very long haul DX which depends on several more factors such as multiple ducting accommodation and specific distance medium separation. It might be said the rarest DX depends on ducting accommodation in which case it will be frequency dependent. When such DX is detected, it is advisable, if a contact is desired, to transmit as near in frequency to that of the calling station. If conditions are such that the signals become perfectly readable without fading, it would not be feasible to assume contact at some other wavelength is possible.

"WHEN TO CALL DX. Probably the surest way of contacting a DX station is to have foreknowledge that a certain time the other 'end of the path' will be searching around a nominated frequency. This should be arranged between the interested parties and experiments carried out as often as possible. This type of DX, as indicated above, is highly unpredictable and necessitates many hours of observation and perseverance. CW or SSB are the most appropriate modes of transmission to use as this allows the receivers at both ends of the path to be adjusted for maximum sensitivity and selectivity thus providing for the best signal to noise ratio should conditions prevail. As already mentioned in several paragraphs throughout this series of articles the weather or movement of air and moisture masses will be the determining factor in determining the probability of such distances beyond 4/3 Earth's radius. The atmosphere (and weather) is bound to the earth by gravitation and moves naturally in the same direction as the Earth's rotation, and the degree of moisture and turbulence determines the actual weather movement. A stable system of weather is either good or bad for DX hunting, good when the normal refractive index of dry air masses changes, and bad when the normal atmosphere and its enveloped gasses remain static. Practically all coastal regions enjoy plenty of change nearly all the year round, but the significant change which is most prevalent during the warmer months occurs when the warm (lower density) air temperature over the land rises considerably above that over the sea. The warmer air over the land rises and is replaced by cooler air from over the sea and this cycle repeats itself as the sun warms the land, whereby, the warmer air from the land moves out over the sea, descends to near sea level, cools, and moves out over the sea, descends to near sea level, cools, and moves inland to complete the cycle.

"THE DAILY WEATHER MAP is a worthwhile study for the keen DX hunters. It will indicate with fair accuracy the intensity of cold fronts, pressure boundaries, areas of instability etc. On a synoptic chart, a collection of complete weather reports at a particular time from observing stations throughout the area are plotted, therefore, they are actually a record of what has passed over the area. They do indicate the processes taking place over a horizontal extent of possibly 1500 kilometres. The words 'High', 'Ridge', 'Low', 'Trough' and 'Col', are used to describe pressures even though strictly speaking one pressure is 'greater', not 'higher' than another. The 'barometric tendency' or 'change' is complex they may appear as combinations of basic pressure systems. During the warmer months of the year, a 'Blocking High' is the most interesting situation for possible band openings. This High appears to block the normal west-to-east migration of the systems of weather from the tropical systems move at normal speed toward the Blocking High, then decelerate, the Lows and Troughs usually weakening and moving southward, while the migratory Highs appear to merge with the

Blocking High. The only indication on the surface chart is a very large area covered by the High with well above normal pressure centres, and may even persist over an area for several days — it is the trailing edge of this situation which interests the long haul DX hunter, particularly when this edge exhibits a very long taper. Any sudden intrusion by an active cold front, squalls, thunderstorms, etc. have a disastrous effect on the propagation characteristics of the band. However, although the extent of the migration ratio at the boundary will be the determining factor; mostly, but not always, a fall in the barometric pressure indicates a fall in mixing ratio.

"Optical phenomena in the atmosphere is a definite sign that an inversion exists. The existence of a stable layer of air is often indicated by clouds with their tops just below the stable layer — haze is also limited in vertical extent, and those with portable equipment can use these situations to best advantage by choosing the right elevation of site; most cases of this condition will be frequency dependent in the early hours of a not stay and reaching a maximum in vertical extent near mid-morning. A setting sun indicate a fairly large mass of moist air exists to possibly 3 kilometres in altitude in a high pressure system. If the pressure is great enough winds will result, such as an exhaust system, near the Earth's surface causing the bottom of the moist air mass to be sheared off. The air mass sinks to replace the sheared off portion and in this process becomes subject to greater pressure, resulting in a temperature rise due to compression. When the temperature gradient or lapse rate is less than three degrees C per 300 metres an inversion is said to exist, even though the upper air temperature may be below that at ground level. The winds that are caused during the events of a subsidence inversion move in the direction of lesser pressure and are termed 'Cols'. 'Troughs' may be well developed to the north and south of the 'Cols' and ridge to the east and west of the 'Cols'.

The effect of all this is general weather and cloud. References: 'Engineering Training', Miscellaneous note, MLR 051, Issue 2, 1968. 'Manual of Meteorology', Bureau of Met. issued April 1966. 'Amateur Radio', August 1969."

### PORTABLE OPERATION

Each year from about Christmas to the New Year a number of groups around Australia go out portable, and their favourite spots are the same. The effect of the vagaries of the DX season. Now this year could be a very good one for 144 MHz in particular, and it could be well worth while making some concerted efforts to get more groups out portable. It's not too soon even now to think about your equipment, power supply, bands to be covered etc. Compatible personnel are a must. It's not much use going out with someone who sulks if things don't work out, someone who drinks too much, smokes too much if you're allergic to smoke and so on.

I will be quite happy through this column to invite any group to have publicity as possible in the coming period up to the end of the year, providing you give me the information in time. To start the ball rolling I hereby indicate that I propose going out on one of my favourite mountains from 26/12/74 to at least 1/1/75 inclusive; I will have 588 and 574 on 52.144 and 432 MHz, and possibly 576 MHz. FM on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available for any liaison required. I would expect to be using beam antennas, with OUTPUT powers of the order of 150 watts on 52.100w on 144, 40w on 432 and 50w on 576, 50w on 52.525, 80w on 145 FM. Standards on 52.555, plus the usual 2 metre FM coverage. HF bands will also be available

about supporting the field boys by coming on the air. Whether happened to all the western Victorian stations of years ago on 2 metres? What about the Albany boys getting into the act this year with a vengeance, how about some 432 contacts across the Great Australian Bight and down to Tasmania. I'll stir up the gang in New Zealand as well, and see if we can get more on the air over there. One thing for sure, if you don't work several States on 144 this year, you may wait for quite a long time to do so, so have that gear purring along in top gear by no later than November.

That's all for this month, must leave you now and look at the portable equipment! Ending with the thought for the month: "Sometimes you think the whole world is falling, and it's only yourself that's leaning".

The Voice in the Hills.

## Key Section

with Deane Blackman VK3TX

Box 382, Clayton, Vic., 3168

CYRILLIC		ROMAN	
А	а	А	—
Б	б	В	—
В	в	В	—
Г	г	Г	—
Д	д	Д	—
Е	е	Е	—
Ж	ж	Ж	—
З	з	З	—
И	и	И	—
Й	й	Й	—
К	к	К	—
Л	л	Л	—
М	м	М	—
Н	н	Н	—
О	о	О	—
П	п	П	—
Р	р	Р	—
С	с	С	—
Т	т	Т	—
У	у	У	—
Ф	ф	Ф	—
Х	х	Х	—
Ц	ц	Ц	—
Ч	ч	Ч	—
Ш	ш	Ш	—
Щ	щ	Щ	—
Ъ	ъ	Ъ	—
Ы	ы	Ы	—
Э	э	Э	—
Ю	ю	Ю	—
Я	я	Я	—

The Russian alphabet now consists of about 32 letters. The script with which the language is written, like our own, is derived from the Greek script. The letters you are reading have passed through the hands of the Romans first. The legend is that the Greek alphabet was taken to Russia by Saint Cyril, and the legend is respected in English because the Russian characters are called "Cyrillic" after him. His alphabet had 43 characters, but a number of purges have occurred, the last of them in the Revolution of 1917 which have reduced the number. I am bound to say "about 32" because different lists differ in how many of the rarer characters they use.

Because few places outside of the USSR are in a position to type or print the Cyrillic alphabet it is not unusual to "transliterate" or write in Roman letters the Russian ones. When I came to look this matter up I was a little disconcerted to find there are several sets of such equivalences available, though to be fair it is only a few of the rarer letters that are different between them. If you are merely interested in copying call signs, names and the like the set of equivalences given below, which happens to be that recommended by the British Standards Association, will probably be adequate for your needs. If you are thinking of having a QSO in Russian I imagine you will already be familiar with the Cyrillic alphabet.

I would be interested to hear from anyone experimenting with this, or with the Japanese Morse.

## AARTG

with Ken Kelly VK4MJ

285 Monach Street, Surfers Paradise, Qld., 4217

### TELEPRINTER OPERATING SPEEDS IN AMATEUR SERVICE

G. DENNY

VK6MT Chairman A.A.R.T.G.

The A.A.R.T.G. has received a request from the Chairman of the British Amateur Radio Teleprinter Group, (B.A.R.T.G.) for the views of those interested in RTTY in Australia and surrounding territories on the question of signalling speeds on the HF and VHF bands.

It is apparent from copies of letters received from the B.A.R.T.G. that the Scandinavian Amateur Radio Teleprinter Group (S.A.R.T.G.) under the Chairmanship of OZ4FF and the PAO RTTY Group (headed by PA0YZ) would like to speed up operations on all bands to 50 bauds on a world-wide basis.

The German Amateur Radio Teleprinter Group, D.A.F.G. (DL8VX, Chairman) are also keen on the change to a single speed of 50 bauds.

Enquiries are being made in Canada and the U.S.A. whether they are willing to change to 50 bauds by the B.A.R.T.G. also.

Some Amateurs in the U.S.A. and Europe favour 75 bauds (not permitted under present licensing regulations in Australia) and the Americans are beginning to operate on yet another speed, 96 bauds.

The standard for speeds on the amateur bands, has in the past, been governed by the types of machines available on the surplus market in large quantities, and the U.S.A. took the lead when

large numbers of machines became available from the Western Union telegraph service which originally operated at a speed of 45.45 bauds, often driven by synchronous motors from 60 Hz mains supply. This set the speed standard of 45.45 bauds for international working.

Commercially, in the U.S.A., most printer operation is either 56.88 or 74.2 bauds and in Europe and Australia (including New Zealand) commercial operation, e.g. the Telex service, is at a speed of 50 bauds as recommended by the C.C.I.T.T., the International Telegraph and Telephone Consultative Committee of the International Telecommunications Union, hence the strong bias towards 50 bauds in Europe, added to which, the majority of machines available on the surplus market are 50 bauds.

Military and fixed link services are tending towards 75 bauds as their standard, this being close to the limit at which a mechanical printing mechanism will stay in one piece for any length of time.

In Australia, almost 100 per cent of the machines that are in amateur hands come from a 50 baud service, and the speed has had to be reset to 45.45 bauds to work overseas stations.

The most common machines in VK and ZL are the Teletype 14 and its derivatives, the Creed 75 and the Creed 54. These are almost always fitted with governed motors, thus enabling a change of speed with relative ease, provided some means of checking the final speed is available.

Regarding the speed of 75 bauds, none of the above machines are capable of being pushed that far without disastrous results, although they may reach 96 bauds without too much difficulty.

Having endeavoured to explain some of the speed saga, maybe it would be wise to voice your opinion as to the 'standard speed' as soon as possible, and you are invited to write to me as the Chairman of the A.A.R.T.G., to enable some correlation of views and the consensus of opinion in VK and ZL to be made known on a world wide basis via other groups.

Please don't put this one aside as your views are important to the rest of the world, if you know of any other Amateur interested in RTTY please pass on this information as soon as possible, so that all may be heard and PRINTED out at the right speed.

## QSP

### INFLATION

"The Council of ARSI in its meeting held in Dec. 1973 discussed the rise in the cost of paper, printing, etc., etc., and decided to reduce the periodicity of the 'Indian Radio Amateur' (magazine) from 8 issues as at present to 3 issues in 1974. The Editorials in March/April '74 issue of Mobile News carries a similar story 'we have carefully reconsidered our estimated income and expenditure for this year, and with no advertising revenue, we can only afford 8 issues of Mobile News in its present format'.

REPEATER, U.S.A.

As of the end of January, FCC had issued 555 repeater authorisations under the new rules. Some 218 requests are still pending. QST Mr. '74.

FOR YOUR—

# YAESU MUSEN

AMATEUR RADIO EQUIPMENT

in

PAPUA-NEW GUINEA

Contact the Sole Territory Agents—

**SIDE BAND SERVICE PTY. LTD.**

P.O. Box 795, Port Moresby

Phones 53557, 55511



I mentioned in this column last year that Don, VK3AKN, had been experimenting with Russian Morse. I thought the topic of keying codes other than the international version which we use might be of interest, even if you do not intend working UA or JA in their own languages, so here are a few comments on Russian Morse to whet your appetite. I am grateful to Don for help with the preparation of some of this material.

# Contests

with Jim Payne, VK3AZT

Federal Contest Manager,  
Box 67, East Melbourne, Vic., 3002

## REMEMBRANCE DAY CONTEST 1974

The names and call signs of those who paid the supreme sacrifice:—

### Royal Australian Navy

J. E. MANN VK3IE  
A. H. G. RIPPIN VK6GR

### Australian Military Forces

C. D. ROBERTS VK2JV  
J. McCANDLISH VK3HN  
S. W. JONES VK3SF  
J. G. PHILLIPS VK5BW  
J. D. MORRIS VK3DO  
R. P. VEALL VK3PV  
D. A. LAWS VK4DR  
K. S. ANDERSON VK6KS

### Royal Australian Airforce

F. W. S. EASTON VK2BQ  
W. ABBOTT VK2KY  
T. STEPHENS VK3GO  
J. F. COLTHROP VK3PL  
J. E. SNADDEN VK3VE  
R. ALLEN VK4PR  
B. JAMES VK5BL  
P. P. PATTERSON VK6PP  
V. J. E. JARVIS VK2VJ  
G. C. CURLE VK2AJB  
M. D. ORR VK3OR  
J. A. BURRAGE VK3UW  
F. J. STARR VK4FS  
C. A. IVES VK5AF  
J. E. GODDARD VK6JG

### Merchant Marine

M. E. GUNTHER VK3NG

## LET'S WE FORGET

### REMEMBRANCE DAY CONTEST 1974

Please think of the Contest Manager thumbing through all the logs and racing to get results ready for the next AR, and help him a great deal by simply putting a FRONT SHEET on your log, be it ever so humble a log, and in large clear letters showing the CONTEST SECTION, your CALL SIGN, and your SCORE.

Of lesser importance at this time but important later on, is your address/name, and your comments.

You realise, of course, that logs need to be sorted into call areas, as VK3, VK4, etc. and sections as phone, CW, open, VHF, SWL etc. . . by name or letter, and the score has to be listed.

Please forward your log as soon as possible. I wonder if you realise that contest logs must be in by September to be processed by the end of the month for November AR. From closing date to the end of September is the crucial time. If logs are early much of the work has been done before the closing date.

A little thoughtfulness on your part may enable the contest staff to have some peaceful meals.

Remember where the logs go this year? Check your log for duplications . . . our most common fault . . . some contestants lost hundreds of points last year apparently not looking for duplications.

If you make a VHF interstate contact you may count as HF but can only make the one contact as in HF.

One contact per band for HF means just that . . . not one contact per band per mode.

Try and find time to exchange names . . . It helps make the contest really friendly. You can help make it a friendly contest other ways also.

VK4PJ tips that VK4 will be well to the fore this year with perhaps VK5 resting on their laurels. He would like to see the 800 log barrier beaten also.

## 1973 CO.WW.WPX.SSB CONTEST

### Top scores

Single Op all band	Australia	Oceania	Scores	GSO Pkt
9V4VU	1,198,832	VK4VU	A	997,338 1437.226
LU5HF	1,130,268	VK1AOP	A	50,872 197.94
TE2CF	1,075,464	VK4PJ	A	4,872 65.29
VK4VU	997,338	VK3SM	21	31,840 274.40
		VK2APK	14	536,182 791.236

\*certificat.

For those interested in DXCC, note the number of prefixes that were contacted from VK land. Some hard work on one of these contest weekends would put one well on the way to the certificate.

### ALL ASIAN DX CW CONTEST

1000 GMT Saturday August 24th to 1800 GMT Sunday 25th August. The exchange is between Asia and the rest of the world, on all bands 1.8 through 28 MHz.

EXCHANGE. For OM stns, RST plus age of op. For YLs, RST plus 00.  
SCORING. One point per QSO. Use prefix of Asian countries (CQ WPX list) for multiplier. Final score is sum of QSO points from each band X the sum of multiplier on each band.

Logs to J.A.R.L. Contest Committee, Box 377, Tokyo, Japan, by 30th Nov.

### THE 10th SCANDINAVIAN ACTIVITY CONTEST 1974

CW: Sept. 14th (1500 GMT) to Sept. 15th 1800 GMT  
PHONE: Sept. 21st (1500 GMT) to Sept. 22nd 1800 GMT.

Non-Scandinavians call CQ SAC on CW & CQ SCANDINAVIA on phone. 3.5 through 28 MHz. Separate logs required for CW/CW and phone/phone. Scandinavian prefixes are LA/LJ/LG, JW, JX, OH, OHO, OX, OY, OZ, SM/SK/SL, and OJO.

(a) Single op, (b) Multi op, single tx, (c) Multi op, multi tx (ALL Clubs). Class (c) separate serials for

each band. Usual RS, RST & 3 serials.

One point per QSO. Multipliers . . . Max 10 per band, of prefixes above.

LOGS to EDR Contest Committee, Box 335, Aalborg, Denmark. Post before Oct 1, 1974.

ALL SAC participants are requested to confirm each QSO with QSL card.

### CONTEST CALENDAR

Aug 10/11 Argentina Phone Contest  
Aug 10/11 European CW Contest  
Aug 17/18 Remembrance Day Contest  
Aug 24/25 All Asian CW Contest  
Sep 14/15 European phone Contest  
Sep 14/15 SAC CW Contest  
Sep 21/22 SAC Phone Contest  
VK/ZL OCEANIA CONTEST 1973

VK operators forwarded 33 logs for the phone section and 28 CW logs. Including the 3 check logs only 52 operators were involved. We should do a lot better in our only international contest, so how about marking your calendar for Oct 5/6 (phone) and Oct 12/13 (CW) this year, 1974.

### COLOMBIAN INDEPENDENCE DAY CONTEST

The 1973 contest was won by UK5IAZ with 755.194 points. The World winner receives a sterling silver cup and sterling silver plaque is awarded to each of the 6 continental winners. Only 1 entry was received from Oceania and ZM3NS won with 22.508. Eligible logs must contain at least 30 QSOs. You are too late now for 1974 but a future effort could be very worthwhile!

### S.A.R.T.O. WORLD-WIDE RTTY CONTEST 1974

August 17th (0000-0800Z, 1600-24.00Z) and 18th (08.00-18.00Z), all bands, 2-way RTTY, 4 classes exchange RST & QSO number, logs to Carl, OZCCZ, Melnesgade 5, Randers, Denmark. Carl also sends a reminder about the WSRV RTTY Award. Details available from AARTO.

# 1974 VK -ZL - Oceania DX contest rules

NZART and WIA, the National Amateur Radio Associations in New Zealand and Australia, invite world-wide participation in this year's VK/ZL OCEANIA DX CONTEST.

### OBJECTS:

For the world to contact VK/ZL/Oceania Stations and vice versa.

### WHEN?

Phone: 24 hours from 1000 GMT Saturday, 5 October to 1000 GMT Sunday 6 October.  
CW: 24 hours from 1000 GMT Saturday 12 October to 1000 GMT Sunday, 13 October.

### RULES:

1. There shall be three main sections to the contest —

- Transmitting phone.
- Transmitting CW.
- Receiving — "Phone & CW" combined.

2. The contest is open to all licensed transmitting stations in any part of the world. No prior entry need be made. Mobile Marine and other non-land based stations are permitted to enter. Their "country status" will be determined by the country which issued the call sign used in the contest.

3. All amateur frequency bands may be used but no crossband operation is permitted. NOTE: VK and ZL stations irrespective of their location DO NOT contact each other for contest purposes EXCEPT on 80 and 160 metres on which bands contacts between VK and ZL stations are encouraged.

4. Phone will be used during the first weekend and CW during the second weekend. Stations entering both sections must submit separate logs.

5. Only one contact on CW and one contact on Phone per band is permitted with any one station for scoring purposes.

6. Only one licensed amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a competitor and must submit a separate log under his own call sign. This is not applicable to overseas competitors operating Club Stations.

7. Entrants must operate within the terms of their licenses.

8. CYPHERS: Before points can be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (Phone) or RST (CW) report plus three figures which may begin with any number between 001 and 100 for the first contact and which will increase in value by one for each successive contact. E.G. — If the number chosen for the first contact is 021, then the second must be 022 followed by 023, 024 etc. After reaching 999, restart from 001.

### 9. SCORING:

(a) For Oceania Stations other than VK/ZL — 2 points for each contact on a specific band with VK/ZL stations; and 1 point for each contact on specific band with the rest of the world.

(b) For the Rest of the World other than VK/ZL — 2 points for each contact on a specific band with VK/ZL stations; and 1 point for each contact on a specific band with Oceania stations other than VK/ZL.

(c) For VK/ZL Stations — 5 points for each contact on a specific band and in addition, for each new country worked on that band, BONUS points on the following scale will be added — 1st contact — 50 points, 2nd contact — 40 points; 3rd contact — 30 points; 4th contact — 20 points; 5th contact — 10 points. NOTE: The ARRL countries list will be used except that each call area of "W/K", "J/A", "U/A" will count as "countries" for scoring purposes as indicated above.

(d) 80 Metre Section — For 80 metre contacts between VK and ZL stations, each VK/ZL call area will be considered a "scoring area" with contact points and bonus points to be counted as for DX contacts. M.B. Contacts between VK & ZL on 80 ONLY.

(e) 160 metre Segment: For 160 metres, contacts between VK/ZL, VK/VK, ZL/ZL and VK/ZL to the rest of the world: Each VK/ZL call area will be considered a "scoring area" with contact points and bonus points to be counted as for DX con-



tacts (Rule 9 (c)). NOTE: A contestant in a call area may claim points for contacts in the same call area for this 160 metre segment.

#### 10. LOGS:

##### (A) OVERSEAS STATIONS:

(a) Logs to show in this order — date, time in GMT, call sign of station contacted, band, serial number sent, serial number received, points claimed. UNDERLINE each new VK/ZL call area contacted. Separate log must be submitted for each band used.

(b) Summary Sheet to show call sign, name and address in BLOCK LETTERS, details of station and, for EACH BAND, two points for that band: VK/ZL call areas worked on that band. "All band" scores will be total qso points multiplied by sum of VK/ZL call areas on all bands while "single band" scores will be that band qso points multiplied by VK/ZL call areas worked on that band.

##### (B) VK/ZL STATIONS:

(a) Logs must show in this order — date, time in GMT, call sign of station worked, band, serial number sent, serial number received, contact points, bonus points. USE SEPARATE LOG FOR EACH BAND.

(b) Summary Sheet to show — name and address in BLOCK LETTERS, call sign, score for each band by adding contact and bonus points for that band, and "all band" score by adding the band scores together; details of station and power used; declaration that all rules and regulations have been observed.

(c) The right is reserved to disqualify any entrant who, during the contest, has not strictly observed regulations or who has consistently departed from the accepted code of operating ethics.

12. The ruling of the Executive Council NZART will be final.

#### 13. AWARDS:

##### — World-wide — except VK/ZL —

(a) Attractive multi-colour certificates to the top scorers in each country. (Call area in "W", "JA", "UA"). Separate Awards for phone and for CW.

(b) Depending on reasonable degree of activity, separate certificates may be awarded for top scorers on different bands.

(c) Where many logs are received, consideration will be given to awarding 2nd and 3rd place certificates.

##### — VK/ZL Awards —

Attractive multi-colour certificates

1. To the top three scorers in each call area of VK and of ZL.

2. To the top three scorers on individual bands (160, 80, 40, 20, 15, 10) in VK and in ZL. — Separate Awards for phone and for CW.

14. Entries from VK/ZL Stations should be posted direct to:

NZART Contest Manager ZL2GX,

152 Lytton Road, Gisborne, New Zealand — to arrive not later than 31 December, 1974; from Overseas Stations — to the above address OR —

NZART, Box 488, Wellington, New Zealand —

to arrive not later than 25 January, 1975.

#### SWL SECTION:

1. The rules are the same as for the transmitting section but it is open to all members of any SWL Society in the world. No transmitting station is permitted to enter this section.

2. The contest times and logging of stations on each band per weekend are as for the transmitting section except that the same station may be logged twice on any one band — once on phone and once on CW.

3. To count for points, the station heard must be in an exchanging cypher in the VK/ZL/Oceania DX Contest and the following details noted — date, time in GMT, call of the station heard; call of the station he is working; RS(T) of the station heard; serial number sent by the station heard; band; points claimed.

4. Scoring is on the same basis as for the transmitting section and a summary sheet should be similarly set out.

5. Overseas Stations may log ONLY VK/ZL stations but VK receiving stations may log overseas stations and ZL stations, while ZL receiving stations may log overseas stations and VK stations. Entries may be made as listed in the section under "Awards".

Jack White ZL2GX

Contest & Awards Manager, NZART ●

## Awards Column

with BRIAN AUSTIN VK5CA  
P.O. Box 74, Crafters, SA. 5152.

#### ALL COUNTRIES IN ZONE 15

1. The award is available to licensed amateurs and shortwave listeners (on a "heard" basis).
2. Contacts on and after 1st January 1975 are valid.
3. Applicants who are members of an IARU Affiliated Society should submit their QSL cards, along with full details of the contacts, to the Awards Manager of their locally affiliated IARU Society. All other applicants must submit their QSL cards to the sponsors.
4. The fee for the award is five IRCs.
5. The address for applications is:

PZK  
Awards Manager,  
Postbox 320  
Warsaw 1  
Poland.

Requirements: Confirmed contacts are required with 23 or more of the following countries and call areas:

OH (3 call areas) UP2 UO2 UR2 UA2 SP (4 call areas) ZK OE (2 call areas) HA YU (3 call areas) ZA 1 M(8A) IT IS FC HV 2B1(BH1) Contacts with SP (Poland) are obligatory.

#### LION CITY AWARD

1. The award is available to licensed amateurs and shortwave listeners (on a "heard" basis).
2. Contacts on and after 10 September 1969 are valid.
3. Do not send QSL cards. A list, showing full details of the contacts should be certified by a club official or two amateurs.
4. The fee for the award is ten IRCs.
5. The address for application is:

Singapore ARTS

Postbox 2728

Singapore.

#### Requirements:

Stations in CQ Magazine Zone 28 require 40 stations in Singapore.

Stations in all other Zones require 20 stations in Singapore.

#### MGS AWARD (AHC Award)

The MGS Award is issued by the JA5 DX Radio Club to licensed transmitting amateurs all over the world.

For the award you need contacts with stations whose suffix call letters are the same as your suffix letters, not necessarily in the same order, however. Stations with two-letter suffix may work also three-letter suffix stations by using the last two letters of their calls. Examples: JA1ABC may submit cards from JA2ABC, JA3ABC, JA4ABC, JA5ABC, WABCAB, WBCBAC, etc. WSKG may submit cards from W1KG, W2KG, JA3KG, JA5KG, etc. Class A requires 10 QSLs, Class B 5 QSLs.

The contacts may be made with any amateur station anywhere in the world provided the suffix letters match with your own call.

Application, including a certified list and 5 IRCs, should be addressed to:

Award Manager, JA5MG,  
Jara Image,  
571-1 Okadashino

Ayuta, Kagawa-Prof., 761-24 Japan.

#### WORKED AFRICAN CAPITAL CITIES (AHC AWARD)

The V.C.R.C. in Vasteras, Sweden, issues the WAFCC Award. It is available to any amateur and SWL in four classes: AA for 45 Capital Cities, A for 30, B for 20, and C for 15. Entries may be made for any single band or mode. Fee: \$1.00 US, 10 IRCs or equivalent. QSL cards need not be sent. However, a certified list of claimed contacts, signed by two amateurs of an official club is required.

Address for the application: Urban Eugenius, SM5RTX, Petruslätan 6, S-723 47 VASTERAS, Sweden.

African Capital Cities: Algeria/Algiers, Angola/Luanda, Botswana/Gaborone, Burundi/Usumbu, Cameroun/Yaounde, Central African Republic/Bangui, Chad/Fort Lamy, Congo/Kinshasa, Congo/Brazzaville, Dahomey/Porto Novo, Egypt/Cairo, Equatorial Guinea/Guaya, Ethiopia/Addis Ababa, Gabon/Libreville, Gambia/Bathurst, Ghana/Accra, Guinea/Conakry, Ivory Coast/Abidjan, Kenya/Nairobi, Lesotho/Maseru, Liberia/Monrovia, Libya/

Tripoli, Malagasy/Tananarive, Mali/Sikasso, Mali/Zomba, Morocco/Rabat, Mauritania/Nouakchott, Mauritius/Port Louis, Mozambique/Lourenco Marques, Niger/Niamey, Nigeria/Lagos, Rhodesia/Salisbury, Rwanda/Kigali, Senegal/Dakar, Sierra Leone/Freetown, Southwest Africa/Windhoek, Somalia/Mogadishio, Sudan/Khartoum, Swaziland/Mbabane, South African Republic/Pretoria, Tanzania/Dar-es-Salaam, Togo/Lome, Tunisia/Tunis, Uganda/Kampala, Volta/Ouagadougou, Zambia/Lusaka.

## 20 Years Ago

with Ron Fisher VK3OM

#### AUGUST 1954

Short Wave Listeners. Sometime around August 1954 Federal Executive decided that these people should be encouraged within the frame work of the Institute. Federal Notes of the time stated: "These people for the most part have been unable to join in our activities in as full a measure as they might desire. It is with this in mind that Federal Executive has suggested that Divisions might find it expedient to form a Listener Section, with particular facilities of its own".

Apparatus for some years around this time, a small portion of the 3.5 MHz band was shared with glider aircraft. They used 3.505 MHz as a communication frequency. Federal Executive approached the Department to have their channel shifted outside the amateur band without success. I do not know if they are still there or not.

The VHF column reports on the successful attempt by several VKs to contact Victorian stations on 144 MHz from a portable location on Mount Lofty. Contacts were made with VK3ATN in Birchlip while signals were copied from VK3LN in Melbourne. Equipment used at Mount Lofty included 122 transmitter and a 6.8/6.8 converter feeding a BC34S receiver and a sixteen phased array antenna.

Technical articles for August included: The Complete Amateur, part two, the receiver. See Fire Crystal Oscillator-Multiplier, by J. Hutchison VK3JH, and a note by the Modulator for the Type 3 by E. A. (Doc) Barber VK5MD.

Included in the new call sign section was the first listing of the new limited licence 'Z' calls issued during the previous June. ●

## PROJECT AUSTRALIS

with David Hull VK3ZOH,

OSCAR 7. As these notes are written (early June) there still has been no call-up for the weather satellites launch on which Oscar 7 will fly. This means a minimum of 2 months before Amateur Radio's seventh satellite will be with us and so there is still plenty of time to get that 432 SSB gear ready.

#### OSCAR 6

As regular users of Oscar will know, the last six months of operation has been very reliable from the users point of view. The satellite is invariably on when it is supposed to be and, equally important, has been off at the appropriate times. Despite some rumours to the contrary the author does not live in his automatic dependence upon an especially well trained XYL. The reason for the continued reliability has been the complete automation of the major command centres in the world, Australia and Canada. These command stations VE3OB/VE2BYG in Canada and VK3ZDH in Australia have carried the major responsibility for Oscar since his automatic departure from a very high order from Bruce ZL1WB. A paper covering the automated systems of both areas was read to the recent PMG Radio Research Symposium in Melbourne and part of this paper will shortly appear in AR.

#### RTTY TEST GEAR

The Project Australia group developed some time ago an RF generator combined with a phase coherent AFSSK generator. This unit will generate 80 Ry's CR LF 60 more Ry's etc. at standard 850 Hz shift and will interface as well to a standard RTTY machine output. If sufficient interest is shown in this the circuit will appear in AR and printed boards made available through normal channels. ●

# You and DX

## DX NOTES

From the log of Ken VK3AH, here are some unusual DX stations with their listed QSL managers. Should some amateurs be experiencing difficulty in obtaining a QSL from a rare DXer, Ken may be able to offer some assistance if a S.A.E. is forwarded to him with details etc.

Ken's address as per 1973 call book is ok.

**DX Station**  
**HR1RSP**  
**A35AF**  
**QSL Information**  
 Via W5GTO  
 Direct to P.O. Box 19, Vavau,  
 Tonga.

**VP1B**  
**F0BD1**  
**KF8BB**  
**HR1JAG**  
 Via W3FVC or G4RS  
 P.O. Box 928, Papapea, Tahiti  
 Via DJ82B  
 P.O. Box 372, Tegucigalpa,  
 Honduras.

**G3VBM/MM**  
**TG9KI**  
**TG9KV**  
**TG9KV**  
**OX3EA**  
 Via ZL1TY  
 c/- PO Box 762, Guatemala City  
 c/- PO Box 762, Guatemala City  
 c/- PO Box 762, Guatemala City  
 c/- Mr E. Stormo, 3970, Dundas,  
 Greenland.

**KL7MF**  
**E4TEM**  
**KABN**  
**WS0SUB**  
 4036 Balchen Dr, Anchorage 99503  
 PO Box 1086, Seattle  
 W7PHO  
 US Navy, PO Box 291, Omaha,  
 Nebraska, 68081

**KU0ITU**  
**KY9ITU**  
**KP4ID1**  
**KD1ITU**  
**KP2ITU**  
**KX4ITU**  
**KH1ITU**  
**KX4ITU**  
**VR1AA**  
**H1BLG**  
**E4BGB**  
**PA2CPK**  
**PA2ZJ**  
**JH3TKM**  
**JD1ACH**  
**HK4DVL**  
**HC2VT**  
**YF1AG**  
**YF1TP**  
**V5SLH**  
**JA1WMS/JA6**  
**KZ5BC**

**W0TJK**  
**W0JUV**  
**KP4DMZ**  
**W1RND**  
**W8ZOE**  
**W4REZ**  
**K5RWK**  
**W4REZ**  
**K3RLY**  
 PO Box 88, Santon  
 W1RLV  
 PO Box 22, El Salvador  
 P.O. Box 2485, Manayara  
 JA3GZN  
 JA3GZN  
 JA3GZN

**PO Box 1948, Medellin**  
**PO Box 5757, Guayaquil, Ecuador**  
**Box 06/517, El Salvador**  
**DLTMO**  
**Box 91, Kuala Beligit, Brunei**  
**JA6BNP**  
**Box 409, Albrook Air Force Base,**  
**Canal Zone.**  
**N.P. Co., Barclays Bank**  
**Ghana, PO Box 2948, Accra,**  
**Ghana.**  
**Box 961, Muscat, Sultanate of**  
**Oman, Arabia.**  
**"Der-Ghail-Kwiet", Ghajin Melel**  
**St, Zebbug, Gozo, Malta.**  
**Dr. K. Hicks, Lagoon Rd, Lord**  
**Howe Island, NSW 2898**  
**WSLUJ**  
**W6WV**  
**Box 314, Bandung, Indonesia**

**9G1DY**  
**A4XFF**  
**9H4G**  
**VK2BKE**  
**HS4AGN**  
**KP6PA**  
**YB1KW**

**36 Pleasant Street,**  
**Ballarat 3350**

**The Editor,**  
**Dear Sir,**

I am writing in reference to the Norfolk Island VHF DX-Pedition planned for the end of this year. Subject to PMG approval, the station should be on the air from 10th December 1974 to 20th January 1975, using 52.144 and 432 MHz.

At this stage one system of equipment is ready for use, however on receipt of the cargo charges from the private airlines serving the island, we would like to somehow cut down on weight.

I therefore desire to purchase a second-hand FTV-650 sideband converter for 52 MHz and similarly if someone has a 2 metre item with light-weight characteristics, then we will negotiate to buy or lease said items.

I have had no problems securing a back up receiver, but we will be relying on the FL50 as the sole generating source of SSB.

A carphone on 52.525 and 52.556 FM will provide an early warning system for 52 MHz I note with interest that 52.525 is a national calling frequency in the U.S.

Antennae at present appear to be identical to that used with success at Learmonth during the Ross Hull.

One 7-element Yagi (heavens know how we will fit it in the hold of the aircraft),  
 3 + 3 vertical for 52.525,  
 4 + 4 vertical for 144 MHz FM,  
 10 EL long Yagi 144 MHz SSB,  
 12 + 12 Slat fold 432 MHz.

Power on 6 & 2 will be only 100 watts PEP or so with the eye to reliability, not super-signals.

On 432 MHz a solid state line up will probably be left transmitting during operation on 6 metres, along with the identifications. If anyone hears us then come onto 6 metres. Frequency 432.450.

The next comment is a calling frequency and at the risk of being unpopular, I cannot see a valid reason to appear above 52.100 MHz, or 144.100 in the light of Geoff VK3AMK's comments re long range DX.

Some of the blame for the non-2 way to SW1AR was due to locals chatting to me on .05 when the tape specifically said "CG DX!".  
 Please support this expedition because as a student, the \$500 I am spending will give you VK3 this season, not me. Operating times ZULU (Norfolk Island has N.Z.S.T.) 1800Z onwards.

Any donation of an old QOE98/40, QOE03/12, etc. would be gratefully received with promise of return of items after the expedition. The basis here is for a reliable continued coverage of the VHF spectrum during the dx-pedition.

Any suggestions as to calling procedure, frequencies etc. would be gratefully received.

Yours faithfully,  
 Stephen R. Gregory, VK3ZAZ  
 Hopefully calling will be VK9ZAZ or VK9ZWI.

More details later.

The Editor,  
 Dear Sir,

I would like to make a few comments after reading the letter by Cyril Maude VK3ZCK in June 1974 A.R.

Cyril seems to be rather scornful of those amateurs who will not or cannot design and build their own equipment. I think I can understand his viewpoint, he is apparently young and has had the benefit of modern education, also he is not interested in DX or in CW, this I deduce from his calisign.

Now in my case, I obtained my licence in 1932, so you can make an educated guess as to my age. When I started the amateur game it was still in the "depression days", transmitting gear was just about unobtainable or priced out of our reach, so we built everything from the power transformer to the final tank coil and aerial, using mainly receiving type components and valves, very often second hand. It was just one, there were hundreds of us doing the same.

Cyril, you are young and keen and apparently capable of designing and building high frequency equipment, this is good, but please remember that this is only one phase of an activity that has many branches. Your licence and the frequencies you operate on confine you to comparatively short range QSOs, a lot of amateurs are interested in this, but there are an awful lot who are not. I spend a lot of time on the 14 MHz band, also the 21 and 28 MHz bands when they are open, and the number of stations all over the world who claim to use "home brew" would be somewhere around about 1 per cent or less at a guess. The biggest average of "home brew" gear would probably be among the Russians, although most of them do not say what they are using.

Time's up, I have had our share of improvising with what was available and we managed to keep amateur radio going, mainly with the help of the U.S. amateurs and the A.R.R.L., without their

numerical strength, amateur radio would probably not now be in existence.

Amateur radio is a rewarding hobby, UHF is only one small part of it, and although the technical side of it is important, the wonderful feeling of comradeship and goodwill that is evident on the DX bands is probably the most important aspect of amateur radio. I have had QSOs with almost 200 countries, covering all shades of political philosophy, but every contact has been friendly and pleasant, surely this must mean something, if there was more of it, the world would be a better place to live in.

So keep it up, you younger members of the amateur fraternity, design and build your own gear, this is as it should be, and there will always be a place for you in the amateur game, but perhaps as you get older you will tire of this side of it, take out a full licence and get into the DX side of it.

You have only to hear the terrific "dog pile" on a rare bit of DX to realise how many amateurs all over the world are interested in this side of amateur radio. I have had contacts with men and women in the remotest of lands, from Chief Justices, Computer designers, Electrical and Radio Engineers, to some really low professions, covering about every occupation there is, doesn't this mean something.

There is still a place, and a big one, for the operators of black boxes (most of which are grey, not black) in this great hobby of ours.

73,  
 Gordon Read, VK2OW

## WHAT'S AROUND THE CORNER IN A.R.

Following our appeals for articles it is pleasing to report that a number of articles (technical, non-technical and humorous) are now at various stages of preparation for publication.

Title	Author
A Transistorised RX for Top Band	VK3ANY
FT200 for AM Use	VK3ASV
A Digital Readout for Transceivers	VK3AOH
A Monitor Scope	VK5YH
Long Wave Antenna Tuning and Matching Unit	VK6DX
Some Thoughts on Speech Processing	VK3AVO
Modifications to the Trio JH60 Receiver	VK2AGJ
Modifying the TCA675 and 1677 for use on 6 & 2 metre FM nets	VK3ACM
A Keyer for VK3RGT	Roly Roper
Modifications to Vinten MTR15 for 53.032 A.M. Net	VK3ACM
Modifications to Vinten MTR12 for 52.525 FM Net	VK3ACM
Experimenter's Delight (Power Supply)	VK5ZIE
Microstrip Data Curves	VK5TB
FLD Country Expedition	ZL4JP via VK4LZ
FT101 Vox Hints	VK2EP via VK4LZ
Modes to Radio Receiver R390	
A/RUP (Part 3)	VK3ZRV
Ground Plane for 2 Metres	VK3AOD
VHF — UHF Advisory Committee	
— 70 cm Draft Band Plan	VK3ZJC
A Simple Pulse Position Modulation System	VK4ZFD
Re-vamping a VTVM	VK2ZAR
Mobile Output Indicator	VK4IJ
EMP — The Ultimate EMI Problem	VK3ODR
20MHz Quad Tuning Made Simpler	VK2QO
The "Passtest" Communicating Calculator (Humorous)	VK3AOH
Modification to the FT200 Antenna Measurements	VK3COP
(Reprint from V.I.C.T. VHFer)	W21MU
Soldering for Electronics	VK3AOH
(Reprint from Zero Beat)	
A Sheet Metal Bender	
(Reprint from Zero Beat)	
What to do with that old receiver	Harry Roach
(Reprint from Zero Beat)	

## Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

The Editor,  
 Dear Sir,

I am writing in reference to the Norfolk Island VHF DX-Pedition planned for the end of this year.

Subject to PMG approval, the station should be on the air from 10th December 1974 to 20th January 1975, using 52.144 and 432 MHz.

At this stage one system of equipment is ready for use, however on receipt of the cargo charges from the private airlines serving the island, we would like to somehow cut down on weight.

# SIDEBAND ELECTRONICS SALES and ENGINEERING

## YAESU MUSEN TRANSCEIVERS

All in short supply, 50% deposit with orders, average delay in delivery 6 to 8 weeks.

FT 101 B AC/DC 160 to 10 M and fan	\$525
FT/FP 200 combination	\$375
Spectronics DD-1 counter for 101/401	\$150
FT DX 400/560 noise blankers,	\$250
FT 101/101B/560 CW filters	\$30

## BARLOW-WADLEY RECEIVERS

Model XCR-30 Mk II 500 kHz to 31 MHz continuous coverage, crystal controlled reception of AM/USB/LSB

\$225

## HY-GAIN ANTENNAS

14 AVQ 10-40 M vertical 19 in. tall	\$50
18 AVT/WB 10-80 M vertical 23 in. tall no guys	\$70
TH3JR 10-15-20 M junior 3 el. Yagi	\$100
TH6DXX 10-15-20 M senior 3 el. Yagi	\$175
204BA 20 M monoband 4 el. full size Yagi	\$150
DB 10-15 10-15 M 3 el. Yagi ideal for use over 204 BA	\$110
Magnetic base mobile whip 108 MHz up with 18'	
RG-58U cable and coax plug	\$18

## ANTENNA ROTATORS

CDR 22-R	\$45
New HAM-2 with new control box, separate brake and rotate controls	\$135

## NOISE BRIDGES

Omega TE 01 up to 100MHz

\$25

EGG INSULATORS the old style porcelain eggs, a dozen for

\$1.50

## POWER OUTPUT METERS

Galaxy RF-550A with 6 pos. coax switch	\$75
Swan WM-1500 4 metering ranges 5-1500 W	\$50

## 144-148MHz Two Metre Equipment

### KEN PRODUCTS

KP-202 hand-held 2 W output transceivers, now with 4 Australian channels, choice out of 40 & 50 plus two of 42, 44, 46 & 48

\$150

KCP-2 NICAD battery chargers & 10 NICAD batteries

\$35

Genuine leather carrying case for KP-202

\$5

## KLM ELECTRONICS

Solid state 12V DC amplifier, 12 W output, ideal with KP-202 & Automatic antenna change-over switching

\$50

### BELCOM LINER 2

20W PEP SSB 12V DC solid state transceiver

\$250

YAGI ANTENNAS 9 element 10 ft. boom, with gamma match coax feed

\$30

POWER SUPPLIES, 240V AC to 12V DC 3 to 3.5 Amps. regulated

\$30

ELECTRONIC KEYS Katsumi model EK 105 A 230V AC with key paddle

\$35

CRYSTAL FILTERS 9 MHz similar to the FT 200 ones, with carrier crystals

\$30

## 27 MHz NOVICE LICENCEE & CITIZEN-BAND EQUIPMENT

### MIDLAND

5 Watt AM 23 channels, 12V DC transceiver, all crystals included, with PTT microphone

\$95

### PONY

5 Watt AM model CB-78, identical to the Midland CB-78

\$95

CB-74 5 Watt AM with 27.880 crystals, for fishermen

\$80

SIDEBAND NC-310 one Watt hand-held 3-channel transceivers

\$50

SIDEBAND NC-501 SSB /AM 23 channel 15W PEP transceivers, soon here

\$175

MIDLANDS PRODUCTS SWR-Meters \$12 & \$16  
PTT dynamic microphone \$10

LOW PASS TVI FILTERS, cut-off frequency 35 MHz  
6 sections filter \$18

All prices quoted are net, cash with orders, sales tax included in all cases, subject to changes without prior notice. No terms nor credit nor COD, only cash and carry, Government & Public Company orders included. Include 50 cents per \$100 value for all-risk insurance, freight, postage and carriage are all extras. MARY & ARIE BLES, Proprietors.

# SIDEBAND ELECTRONICS SALES and ENGINEERING

P.O. BOX 23, SPRINGWOOD, N.S.W. Post Code 2777

TELEPHONE (STD 0471) 51-1394

## COPAL-CASLON 24-HOUR DIGITAL ELECTRIC CLOCKS

CLEARLY VISIBLE FIGURES  
INSTANT READABILITY, ACCURATE



### Model 601, A.C., The Popular One

A unique desk/table calendar model, combining utility and beauty, receiving the Mainichi Industrial Design Award, Japan. Digital flip cards advance date, day, hour and minute automatically. Anodised aluminium case houses built-in neon lamp, 230V, 50 Hz. A.C. Cord and plug attached.

Price \$25.00

### Model 703 AC, with Alarm

A desk/table clock of modern design, Avocado Green. Built-in neon lamp, 230V, 50Hz AC Cord and plug attached.

Price \$17.90

### Model T-11, Battery

New Model, BATTERY POWERED, with alarm. Tuning fork controlled.

At last, a clock that will operate anywhere and does not clutter up the room with a cord. It is accurately controlled with a tuning fork operating at 400 Hz., running from a single torch cell which has a life of approx. one year. The alarm can be set 24 hours ahead. Push-button operated globe to illuminate face. Ultra modern cylindrical case, silver finish. 3 1/2 inch diam. x 8 1/2 inch.

Price \$35.50

### Model 801 Wall Digital Clock

A large Wall Clock—  
295mm x 174mm x 134mm,  
Colour, off-white, 230V AC 50Hz, 63mm high figures. Cord and plug attached.

Price \$58.

### Model 225

Further stocks expected soon

Price \$14

ALL PRICES INCLUDE SALES TAX  
Post and Packing \$1.25

## Bail Electronic Services

60 SHANNON ST., BOX HILL NTH.,  
VIC., 3129 Phone 89-2213

### WIA—A.A.R.T.G.

Interested in RTTY? Write for details to Secretary, Australian Amateur Radio Teleprinter Group, P.O. Box 16, Morley, W.A., 6062.

A.A.R.T.G. issue the quarterly magazine 'KEYBAUD' for RTTY enthusiasts

## CRYSTAL FILTERS and DISCRIMINATORS

by K.V.G.  
1 27/64" x 1 3/64" x 3/4"



### 9.0 MHz DISCRIMINATORS

XD9-01 ± 5 kHz	RTTY	\$24.10
XD9-02 ± 10 kHz	NRFM	\$24.10
XD9-03 ± 12 kHz	NRFM	\$24.10

### 9 MHz CRYSTALS (HC25/U)

XF900	9000.0 kHz	Carrier	\$3.80
XF901	8999.5 kHz	USB	\$3.80
XF902	9001.5 kHz	LSB	\$3.80
XF903	8999.0 kHz	BFO	\$3.80
F-05	HC25/u Socket		.50

### 9.0 MHz FILTERS

XF9-A	2.5 kHz	SSB TX	\$31.95
XF9-B	2.4 kHz	SSB RX	\$45.45
XF9-C	3.75 kHz	AM	\$48.95
XF9-D	3.0 kHz	AM	\$48.95
XF9-E	12.0 kHz	NRFM	\$48.95
XF9-M	0.5 kHz	CW	\$34.25

## EXPORT ENQUIRIES WELCOME



SPECTRUM INTERNATIONAL  
BOX 1084C CONCORD  
MASSACHUSETTS 01742

Registration Fee: \$1.00; Air Mail: 26c per 1/2 oz.  
Shipping weights: Filters 2 oz ea., Crystals 1/2 oz ea.  
All Prices in U.S. Dollars.

## BRIGHT STAR CRYSTALS

- PROMPT DELIVERY GUARANTEED
- ALL TYPES OF MOUNTINGS

Such as HC6/U (style D) . . . HC18/U (style J) . . . HC25/U (style K) . . . etc. . . . Frequency range up to 140MHz on 5th overtone.



- ACCURACY
- STABILITY
- ACTIVITY
- OUTPUT

Our increased production now enables us to offer Special Discounts from 10% Let us quote you for all your Crystal requirements.  
Our easy-to-read Price List is now available.

## BRIGHT STAR CRYSTALS PTY. LTD.

35 EILEEN ROAD, CLAYTON, VIC., 3168. Phone: 546-5076 (Area Code 03).

### INTERSTATE AGENTS:

Sydney: PARIS RADIO ELECTRONICS, 7a Burton Street, Darlinghurst, N.S.W. 2010, Phone: 31-3273.  
Perth: W. J. MONCRIEFF PTY. LTD., 176 Wittenoon Street, East Perth, 6000, Phone: 25-5722, 25-5902.  
Brisbane: FRED HOE & SONS PTY. LTD., 246 Evans Road, Salisbury North, 4107, Phone: 47-4311  
Adelaide: ROGERS ELECTRONICS, P.O. Box 3, Modbury North, S. A. 5092. Phone: 64-3296.



The striking new control box brings operational ease and reliability to antenna rotation. Styled to compliment surrounding communications equipment the CD44 provides all operator controls on the front panel, making access to the back of the box unnecessary. Front panel calibration assures maximum accuracy with minimum effort. The separate off/on switch offers continuous directional indication on the illuminated meter. The lifetime of the control is enhanced by the addition of individual snap action switches for clockwise/counter-clockwise rotation. Finished in tan and brown with a brushed gold anodized front panel, the CD44 will be a welcome addition to any communications center.

Size: 8-1/8" W X 8-1/4" D X 4-1/8" H.

**HAM II** The rotor continues the tradition of the heavy duty cast aluminum bell-housing, long the trademark of Cornell-Dubilier Electronics' amateur rotors. The inline construction evenly supports the load on two six inch races containing 98 precision ball bearings. An electrically controlled wedge brake is housed in the base, positively locking the rotor in any of 96 segments spaced 3° 45" apart. The high torque motor drives the unit through a machined stainless steel gear and pinion assembly, rotating a full 360 degrees in less than 60 seconds. Designed for antennas of up to 7.0 sq. ft. of wind load area, the rotor promises years of trouble free operation. The rotor accepts masts from 1-3/8" to 2-1/16".

#### SPECIFICATIONS

INPUT VOLTAGE, STANDARD MODEL: 220 VAC. 50-60 HZ.  
TURNING TORQUE: 800 IN.LBS.  
BRAKE TORQUE: 3500 IN.LBS.  
SIDE THRUST CAPACITY: 6600 IN.LBS.  
CABLE: 8 WIRE (BELDEN 8448 or EQUIVALENT UP TO 150 FT.)  
SHIPPING WT.: 29 LBS.



CD44



Although similar in appearance to the TV bell housing rotors, the CD44 rotor has over four times as many precision ball bearings in the dual 6" diameter race to provide additional load capacity for medium sized communications antennas. The high torque motor drives the unit through a machined stainless steel gear and pinion assembly, rotating a full 360° in less than 60 seconds. When used with antennas of not over 2.5 sq. ft. wind load, a built in brake on the motor prevents windmilling. Accepting masts from 1-3/8" to 2-1/16", the CD44 promises years of trouble free operation.

#### SPECIFICATIONS

INPUT VOLTAGE, STANDARD MODEL: 220 VAC. 50-60 HZ.  
TURNING TORQUE: 800 IN.LBS.  
BRAKE TORQUE: 3500 IN.LBS.  
SIDE THRUST CAPACITY: 6600 IN.LBS.  
CABLE: 8 WIRE (BELDEN 8448 or EQUIVALENT UP TO 150 FT.)

# Y.R.C.S.

with Bob Guthrielet

Mothfist Moss, Kadina, S.A., 5554

Educate! Educate! Educate! is a catchphrase which wins votes and increases taxation. Within recent months YRCS has been deluged with statements concerning our own programme of education, using the term "professionals". Even the Federal Co-ordinator has been charged with having had "no experience in the educational field". Obviously the pieces of framed parchment on the walls of my study indicating *Vita Studiosa Operoseque* Laureis, backed by 38 years of teaching, seem to have no value to those who assume that the only "professionals" are located in High Schools, Colleges and Universities.

YRCS needs both the "professionals" and the ordinary individuals, many of whom are our instructors, and they teach!

In my report to the Eastern WIA Federal Convention, I stated my doubts concerning unreserved reliance on statistics; this has been confirmed by a message received to the effect that the University of NSW Radio Club has been notified of 15 successful ACP (and/or AGLCP) candidates at the February WAG examinations. Congratulations to this YRCS club, and thank you for negating the opinion that YRCS in NSW is on the decline.

Information has come to hand that the IREE pennants for 1973 in Victoria have been awarded to the Central Gippsland Youth Radio Club and the St. Johns College Radio Club. We commend both clubs on having achieved success in this direction.

Supervisors are requested to ascertain whether your state has a constitution for YRCS, as this matter will be mentioned during the August conference at Maitland.

## Book Review

### ARRL, THE RADIO AMATEUR'S HANDBOOK, 51st Edition, 1974

The last copy of the Handbook that I bought was in 1971. I bought it then because I felt there was sufficient new material in it to make my '83 copy obsolete. I am going to buy the '74 Handbook for the same reason.

Amateur Radio, like all other fields, is now suffering from "Future Shock": too much is happening too fast for any one person to keep up with.

As various new techniques have been applied to Amateur Radio, so the Handbook has expanded its coverage to include them. The result of this may be seen in the changes between the '48 Handbook, which contained a smattering of theory and a lot of constructional projects, and the '74 Handbook with only enough constructional projects to give examples of the techniques in action. There is a leaning toward telling the reader how to design his or her own receiver, VFO etc., rather than a nut and bolt description of how to build one.

Transistors have displaced valves to a large extent, and ICs are also included in many projects (even the humble code practice oscillator). While much time is spent on explaining the finer points of mixer design or methods of reducing front and noise, ICs are regarded as black boxes (connect antenna to pin 1, battery to pin 2, loud speaker to pin 3 and Bingo! instant receiver). Few internal circuits are given and almost no information on the component characteristics.

The emphasis throughout is on the practical and it is of credit to the original author(s) of the chapter on electrical laws that this section remains substantially unchanged.

The Handbook has been described as the "Bible of Amateur Radio" and every Amateur or prospective Amateur should have a copy. If your copy is more than a few years old, it might be a wise idea to invest in a new copy.

As the Amateur borrows from the realm of electronics, so the pressure to include more and more of it is being put on the shoulders of the editors' job more difficult and it will be interesting to see how they cope. Copies are available from the WIA and are a good buy at \$6.50.

## Hamads

### FOR SALE

Rx: Marconi CR150, 2-60 MHz, complete with P/S and Handbook, in good working cond., \$85. Rx: Edjyness 770R, 10-165 MHz, in good working cond., \$85. VK6WE, QTHR. (02) 46 3232.

Teleprinter, Creed Model 7C, in good working order, \$60. VK6ZAD, QTHR.

FTDX400-FV400 VFO, CW filter, 160 m rec. 4-6 K06 spare valves. Cert. cheque or m.o. \$475, flight extra. 32A SSB/AM/CW/PM exciter 160-10 m 120. VK6IZ, Unit 32, Harbour Heights, East Fremantle, W.A. 6158.

Self Supporting Steel Tower (4 legs) and Ladder, excellent condition. Ring (02) 807-9188 — after 6 pm for full details. VK2SKZ.

Swan 500CX Transceiver W/VOX & A.C. supply. F 1 2008 Linear, mint condition. Ph.: (03) 24 1231, A.H. 20 6135.

1 AWA MR6A, 5 channels with A.B.A., \$90.00. 1 H/B Pye Ranger, unconverted, \$20.00. 1 STC L/B Carphone for 6 FM with xstals, \$30.00. 1 AWA & MR3A going on 20 metres, less xstals, \$25.00. P.r.: (03) 92 5667 between 7 and 8 p.m. only.

Communications Rx. Trio 9R 59DS, brand new xtal calibrator V.R. speaker and aerial connector, \$140.00. VK2AHR, QTHR. Ph.: (02) 807 6762.

Teleprinter on matching metal table, VGC, \$85. Teletype character and distortion test generator, \$35. Command Tx 4 to 5.3 MHz, \$10. 3 CM microwave equipment including two dish and signal generator with cavity wavemeter and bolometer bridge, four klystrons and large quantity of plumbing, \$35. VK3ZAO, QTHR. (03) 96 4292.

National HRO hotted up as per RSGB modifications, complete with mechanical filter all coils full hand-soldered for all bands. As new appearance, Eccleston Electronics, 146a Colham Road, Kew, Vic. 3101.

Two TBS-1 wide power supply and accessories, in perfect order, demonstration given, \$250. Contact Robert Davey (VK4FM), The Chalet, Mapleton, Qld., 4560.

Palec VTYM \$30.00. 3 Inch CRO \$20.00. MR10 52-525 \$35.00. MR20A 146M/C \$60.00. ATV or 432 M/CAM TX with p/supply \$90.00. Sub-Carrier Generator \$20.00. 32 EL 432 M/C Antenna \$20.00. 2 146 Fibre Glass Whip, base loaded \$10.00 ea. VK2AJY/T, QTHR.

Rx General Coverage 0.5 to 30 MHz, AF, IF and tuneability 1 F of 3-5 MHz (from EA240), built from commercial kit with printed/engraved front panel in matching metal cabinet with speaker. Front end a major difference to original giving high selectivity/gain and is crystal locked (circuit available). Parts cost approx. \$300 and set has 26 transistors. Best offer, VK4XT, QTHR.

Heathkit HW-7 Transceiver with matching PS and imported Cedar PR40 Receiver preselector, all commercially built, as new cond. \$120. VK6/JF, QTHR or Kalgoolie 212211.

TR 4 Transceiver with AC ps in excellent condition with spare set of finals and other valves for unit, \$375. ONO, VK2ZAG, QTHR. Ph.: (03) 43 2427.

Pye MX II 53.995 Tx Rx, \$20. 6Ms Pye MR IIIA Tx Rx Tx, modified to DSB, 220, 6 Mx VDC 71 cond., \$20. 32 L 2 Mx cond. 28 MHz IF, \$20. Incomplete MR10C coband, \$10. Type Y Power Supply 6.3 UAC 250 UDC, \$20. 3. In Oscilloscope, working order, homebrew, \$15. VK2ZSC, QTHR. Uh.: (02) 85-5324.

Drake SPR-4 Receiver, almost new, \$475. Also Drake R Receiver AT 5, Transmitter, Aerial Tuning unit and generator set, \$130. Two R 20 type Receivers AWA. One VHF, one HF, fixed frequency, \$35 each. Contact John Z. 11/36 Bennett St., Bondi 2008 NSW. Ph.: (02) 387-1078.

Superior VHF QTH C/W House, Shack and Workshop also XYL, sized Lewis 12 km South of Adelaide. Available late November 1974. Enquiries VK5ZWW Box 1117, Orange 2800.

Rx AR8A, in working order, Copy of Handbook available, \$90. ONO, VK6NE, QTHR.

SB30v namband receiver, 3.5 to 30 MHz, complete with SSB, CW, and AM crystal filters, excellent condition, \$235. Stalle antenna rotator, excellent condition, 45 feet of control cable, new ruggedised drive shaft, \$35. VK3OM, QTHR. (03) 560 8215.

2 AWA MR6A FM carphones, 1 converted to 2 mx FM, 6 channels, xials for Repeaters CH 1 and CH 4, simplex ch 40 and ch 50. The other used for spare parts (mic. included, unconverted, all components O.K.). Both units to be sold together for \$125.00. B. Bathols, VK3UV, 3 Connewarra Ave., Aspendale, 3195 (03) 90-6424 (evenings).

### WANTED

HW 32 or GA/AXY III, PFFS, VK2AJY/T, QTHR. FT75 transceiver and DC 75 mobile power supply. Will pay cash or exchange for above mentioned receiver for sale. VK4XT QTHR, or write PO Box 496, Dalby, Qld., 4405.

KEN 2 meter hand held FM transceiver. VK4XT, QTHR, or write PO Box 496, Dalby, Qld., 4405.

Circuit Diagrams and tuning data on ATRC RAAF transceiver and also power supply K1 to suit TRC-20, Central Col Paton, 2 Premier St., Maryborough, Qld., 4550.

Circuit or Handbook for Hallicrafters S27 to buy, borrow or copy. VK5MT, QTHR.

Circuit Diagram or related material for APX-6. Can copy, return of originals guaranteed if requested. VK3TX, QTHR.

## ANTENNA PARTS, KITS



QUAD HUB: \$17.25 plus P/P \$1.25

QUAD KIT: \$90.00. Freight forward.

Consisting of: Hub: 12 ft. solid F/G. Spreaders: Aluminium Extenders. Ferrules. Adaptors: 350 ft. 0.064 Hard Drawn Copper wire. Nylon line and Insulators. Araldite (10 oz.) \$4.00 if required.

### MOBILE ANTENNA PARTS:

6 ft. solid F/G blanks, \$3.00  
1/2-1/4 inch solid brass butt fitting, 1/2 in. whit. or 3/8 in. UNF thread \$2.00  
Brass tip chuck 50c

### S. T. CLARK

P.O. BOX 45, ROSANNA VIC., 3084 Ph.: 45-3002

### STOLEN PROPERTY

The following were reported as stolen from the Agilis P/L factory in Thornbury, Vic. on 30th May:-

Tektronix 422 D/B o/scope serial 140 Sugden Distortion measuring unit 5C453 Serial 2128 Sugden Audio Oscillator S1453 Serial 2059 and 2 calculators.

If whereabouts are known please contact Victoria CIB.

# R.H. Cunningham



## The Name Everybody Knows

R. H. Cunningham is the name to know when it comes to superior quality communications and electronic equipment and components. Names of products that have proved themselves in the field of international electronics; products such as Sennheiser microphones and test equipment, Eddystone communications receivers,

Bulgin components, Sonnenschein batteries, Alert fuses, Paso sound equipment, Dow-Key RF components, Stolle aerial rotators, Millbank PA equipment to name some. But let us tell you more and in detail. . . WRITE NOW and we will register you to receive our FREE monthly Technical Library Service Bulletin.



# R.H. Cunningham

Pty. Ltd.

493 499 Victoria Street, West Melbourne, 3003, P.O. Box 4533, Melbourne, Victoria.  
Phone 329 9633. Cables: CUNNIG MELBOURNE. Telex: AA31447

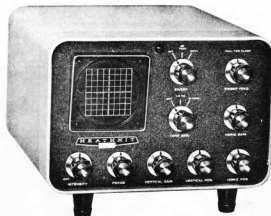
N.S.W.: Sydney. Ph.: 909 2388. W.A.: Perth. Ph.: 49 4919. QLD.: L. E. Boughen & Co. Ph.: 70 8097.  
S.A.: Arthur H. Hall Pty. Ltd. Ph.: 42 4506.

HEATH  
Schlumberger



*Pioneer And World-Leader in Electronic Kits*

# MONITOR SCOPE MODEL SB-610



- Provides accurate Display or Transmitted AM CW RTTY Signals.
- Shows signal envelope, A.F. and R.F.
- Shows receiver I.F. envelope with IF's up to 6MHz.
- Operates 160-6 Metres. 15W - 1kW.
- Trapezoid patterns.
- Signal Power Limits, 15 Watts for 1 kW.
- Built-in Tone Oscillators.
- 50-75 ohm. Coaxial Input.

\$105.88 incl. Sales Tax

Ex Stock

# RF LOAD WATTMETER MODEL HM-2103



- Frequency Range 1.8 to 30 MHz
- Wattmeter Range 0-200 and 0-1000 watts
- Wattmeter Accuracy  $\pm 10\%$  of full-scale reading
- Power Rating 175 watts continuous, 1000 watts maximum
- Overload Indication Thermal switch activated
- SWR Less than 1.2:1
- Load Type Noninductive, solid carbon
- Load Impedance 50 ohms nominal
- Connectors UHF type SO-239

5 1/2" wide x 6" high x 1 3/4" deep

\$105.82 incl. Sales Tax

Ex Stock

## AVAILABLE ONLY FROM

### AGENTS—

- S.A. Associated Services Pty. Ltd.,  
110 Tynte Street, Nth. Adelaide, S.A.  
Tel.: 267 2246
- Q'ld. L. E. Boughen & Co.,  
P.O. Box 136, Toowoong, Q'ld., 4066  
Tel.: 70 8097
- W.A. Dawson Instruments,  
70b Hale Road, Wembley Downs, W.A., 6019  
Tel.: 41 4117

SCHLUMBERGER INSTRUMENTATION AUSTRALIA (PTY.) LTD.  
112 High Street, Kew, Vic., 3101. Tel.: 86 9535

SCHLUMBERGER INSTRUMENTATION AUSTRALIA (PTY.) LTD.  
Suite 7, P. & M. Bldg., 134 Willoughby Road, Crows Nest, N.S.W.,  
2065 Tel.: 439 7650.

### AUTHORISED DISTRIBUTORS

Digitronics Australia Pty. Ltd.,  
12 William Street, Maryville, N.S.W., 2293. Tel.: 69 2040

A. Oliver Electronics Pty. Ltd.,  
188-192 Pacific Highway, St. Leonards, N.S.W., 2065.  
Tel.: 43 5305